



Government of Bengal

Public Health Department

Bengal Public Health Report

By

Dr. C. A. Bentley, C.I.E., M.B., D.P.H., D.T.M.&H.

Director of Public Health, Bengal

Reports of the Bengal Sanitary Board and the Chief Engineer Public Health Department

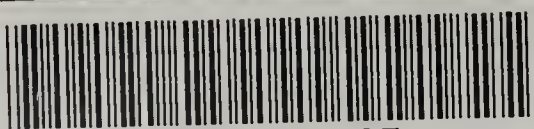
For the Year 1928

Calcutta

Bengal Secretariat Book Depot

1930

Price—Indian, Rs. 8; English, 13s. 6d.



22501294097



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Published by the Bengal Secretariat Book Depot, Writers' Buildings, Calcutta.

Agents in India.

Messrs. S. K. Lahiri & Co., Printers and Booksellers, College Street, Calcutta

Messrs. Thacker, Spink & Co., Calcutta.

**Customers in the United Kingdom and the Continent of Europe
may obtain publications either direct from the High Commissioner's office
or through any book seller.**

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Bengal Public Health Department

Part I

Sixty-first Annual Report of the Director of Public Health
Bengal, 1928.

SECTION I.

Meteorology.

The following brief account of the rainfall over Bengal, during the period May to October 1928, is extracted from the report of the Director-General of Observatories :—

The total rainfall of the month of May was in slight defect in the Presidency and Burdwan divisions, but in large excess in the Chittagong division. In June it was in large excess in the Burdwan division, in moderate excess in the Presidency division and normal or in slight excess in the other divisions. In July it was moderate to large excess except in the Chittagong and Dacca divisions. In August there was a slight excess of rainfall in the Presidency, Burdwan and Rajshahi divisions, and a slight defect in the Dacca division. September's rainfall was largely below normal except in the north of the province. In October rainfall was in large excess throughout the province. The total rainfall of the period May to October was normal in the Dacca and Chittagong divisions and in slight to moderate excess elsewhere.

Departure expressed as a percentage of the
Normal Rain fall.

Division.	May.	June.	July.	August.	September.	October.	Monsoon season, 1928.
Presidency ..	-9	+23	+34	+11	-42	+49	+10
Burdwan ..	-12	+68	+46	+17	-52	+36	+22
Rajshahi ..	+5	+14	+18	+16	-17	+142	+17
Dacca ..	+3	+2	..	-10	-43	+124	+2
Chittagong	+34	+12	-4	-5	-37	+50	+3

Sections II to IV (European Army, Indian Army and Jails respectively) are no longer dealt with in provincial reports.

SECTION V.

Vital Statistics.

2. The Provincial Birth and Death Rates (Annual Forms Nos. I and II).—The provincial birth and death rates for the year 1928, calculated on the total population of the province excluding the Chittagong Hill Tracts—46,522,293, are stated as follows :—

	Birth rate.	Death rate.
1928 (per mille) ..	29·6	25·5
1927 (per mille) ..	27·7	25·6
Increase or decrease (per cent.)	+6·9	-0·4
Quinquennial average	28·8	25·3
Increase or decrease (per cent.)	+2·8	+0·8

The actual provincial birth and death rates, allowing for a probable omission of 27 per cent. may be assumed to have been 37·3 and 32·3 respectively during 1928, compared with 35·17 and 32·51 per cent. in 1927.

3. Comparison of Bengal Vital Statistics with those of the other provinces.—The table below shows that Bengal registered a birth rate higher than Burma only and a death rate lower than Central Provinces, Bombay and Madras. Its infant mortality rate was lower than Central Provinces, Burma, Madras and Bombay but higher than others.

Provinces.	Birth rate per mille of population for the year 1928.	Death rate per mille of population for the year 1928.	Infant mortality rate per mille calculated on the number of births registered during the year 1928.		
			Male.	Female.	Total.
Bengal Presidency	29·6	25·5	183·2	172·6	178·1
Madras Presidency	37·4	26·4	195·5	172·8	184·2
Bombay Presidency	38·17	27·28	188·37	171·56	180·29
United Provinces	38·24	24·15	165·95	153·13	159·90
Punjab ..	46·30	24·72	171·55	163·25	167·62
Central Provinces	46·51	33·66	253·59	222·38	238·41
Bihar and Orissa	38·27	25·29	141·42	121·77	131·79
North-West Frontier Province ..	32·52	19·31	138·58	134·94	137·00
Burma ..	25·85	21·28	220·00	198·74	209·64
Assam ..	31·24	22·16	182·65	160·59	172·01

4. Rates of natural increase in the various provinces.—The rate of natural increase of the population or the difference between the birth and death rates affords the best comparative index of the health conditions of the different provinces, and judging from this standard, although Bengal doubled its rate in 1928, it is still at the bottom of the list.

Provinces.	Rate of natural increase per mille.		
Punjab	21·6
United Provinces	14·1
North-West Frontier Province			13·2
Bihar and Orissa	13·0
Central Provinces	12·8
Madras	11·0
Bombay	10·9
Assam	9·1
Burma	4·6
Bengal	4·1

5. Natural increase of population in Bengal.—The population of Bengal as a whole increased by 186,665 giving a rate of 4·1 per mille as compared with 2·1 in the previous year. This increase was shared by all the divisions. In the Burdwan and Presidency divisions the improvement was the result more of a higher birth rate than a reduced death rate. In the Rajshahi division the increase in the death rate was much higher than the reduction in the birth rate. In the Dacca, and Chittagong divisions, on the other hand, the increase in the birth rate was much higher than the corresponding increase in the death rate.

Divisions.	Natural increases per mille.		Differences.
	1927.	1928.	
Burdwan	+2·8
Presidency	+4·9
Rajshahi	—1·0
Dacca	+1·5
Chittagong	+2·0

Birth rates.

Divisions.	1927.	1928.	Differences.
Burdwan	+2·4
Presidency	+3·0
Rajshahi	—0·3
Dacca	+2·1
Chittagong	+3·0

Death rates.

Divisions.	1927.	1928.	Differences.
Burdwan	—0·4
Presidency	—1·9
Rajshahi	+0·7
Dacca	+0·6
Chittagong	+1·0

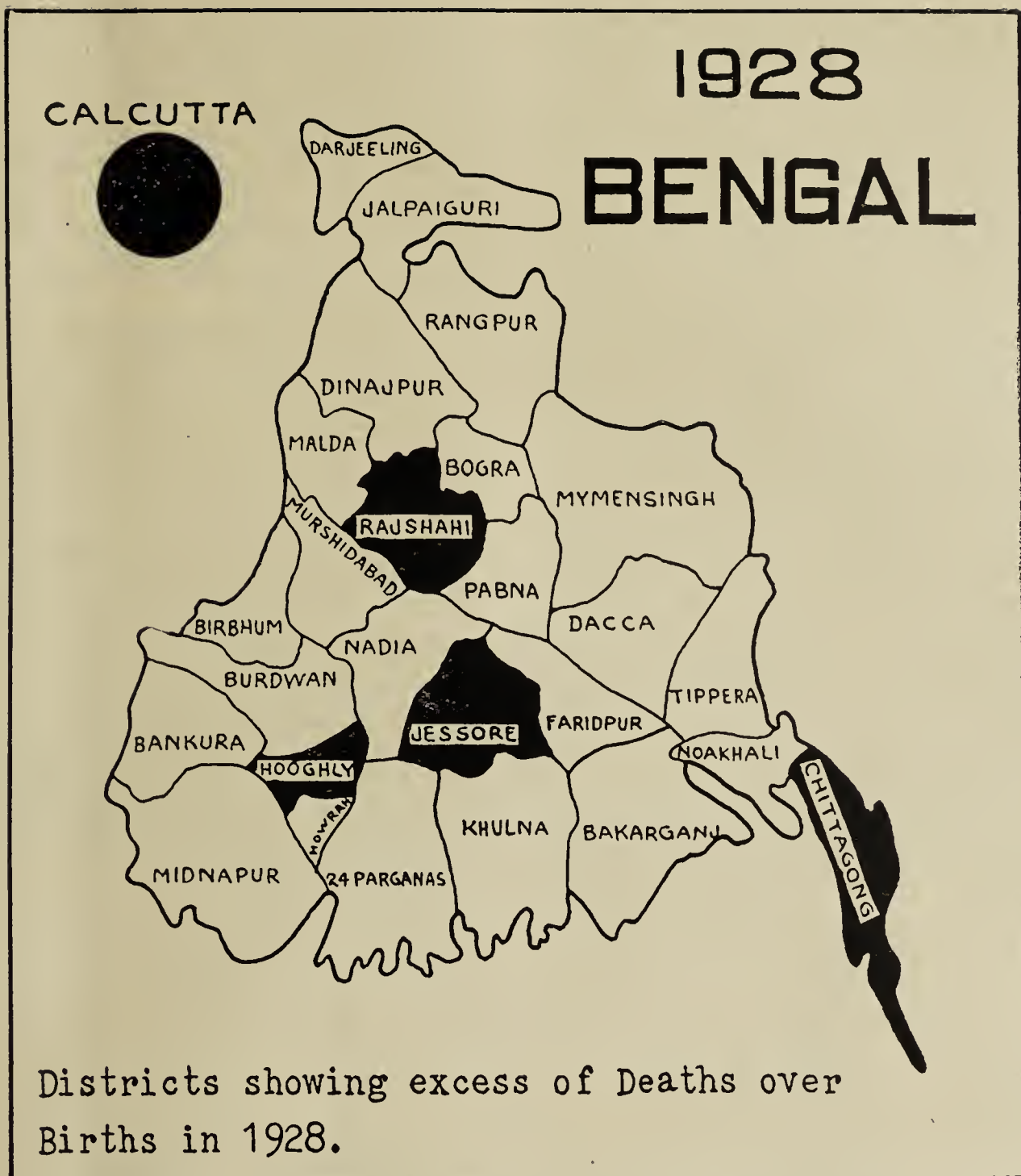
Turning to the districts, 22 of them showed an increase in their population in varying proportions. Even Khulna, Bakarganj, 24-Parganas and Howrah which showed excess of deaths over births in the previous year, improved in 1928.

Districts.		Natural increase in districts per mille.		
		1928.		1927.
Murshidabad	+12·8	+6·3
Bankura	+11·0	+6·5
Khulna	+9·7	..
Tippera	+8·2	+4·0
Noakhali	+8·1	+5·5
Birbhum	+7·9	+7·5
Bogra	+6·2	+3·4
Midnapur	+6·0	+2·1
Dacca	+5·9	+7·1
Malda	+5·8	+5·2
Jalpaiguri	+5·6	+6·7
Mymensingh	+5·4	+3·4
Darjeeling	+5·1	+4·3
Bakarganj	+4·2	..
24-Parganas	+3·9	..
Nadia	+3·9	+2·9
Rangpur	+3·7	+4·5
Faridpur	+3·7	+3·9
Burdwan	+2·8	+3·5
Howrah	+1·7	..
Dinajpur	+1·3	+4·1
Pabna	+0·4	+0·7

Five districts, on the other hand, registered a larger number of deaths than births. Of these Calcutta, Jessore and Hooghly showed a similar increase in 1927, while Rajshahi and Chittagong were new additions to the list in the year under review.

Excess of deaths over births.

Districts.	1927.			1928.		
	Birth rate per mille.	Death rate per mille.	Excess of deaths over births.	Birth rate per mille.	Death rate per mille.	Excess of deaths over births.
Calcutta
Jessore
Rajshahi
Chittagong
Hooghly



6. **Decadent Areas.**—While there has been an apparently marked improvement in no less than 22 out of the 27 districts, population shows a decline in parts of nearly every district as is evidenced by the following table. Some of the localities that were decadent in the previous year show a marked improvement in the year under review, while others that were healthy before, have retrogressed. As instances of the former may be quoted Birbhum, Bankura, and Midnapur in the Burdwan, 24-Parganas and Khulna in the Presidency, Darjeeling, Bogra and Pabna in the Rajshahi, Mymensingh in the Dacca, and Noakhali and Tippera in the Chittagong division. On the other hand, Nadia and Jessore in the Presidency, Rajshahi, Dinajpur and Jalpaiguri in the Rajshahi, and Faridpur in the Dacca division have become unhealthy. Of the rest Howrah, Murshidabad, Rangpur and Malda continued improving while Burdwan, Hooghly, Bakarganj and Chittagong persisted in their decline. Dacca which had no decadent area in 1927, showed signs of unhealthiness in 1928.

Decadent Areas in Bengal.

Districts.	Total deca- dent area in square miles.		Percentage of district.		Improvement + or retrogress- ion—
	1927.	1928.	1927.	1928.	
Burdwan Division—					
Burdwan	499	666	18.5	24.6	—
Birbhum	4	..	.2	..	+
Bankura	318	73	12.1	2.8	+
Midnapur	2,008	940	39.7	18.6	+
Hooghly	602	637	50.6	53.6	—
Howrah	267	9	50.4	1.7	+
Presidency Division—					
24-Parganas	2,390	2,189	49.3	45.2	+
Nadia	466	1,230	16.8	44.3	—
Murshidabad	416	47	19.6	2.2	+
Jessore	2,201	2,608	75.8	89.8	—
Khulna	1,205	208	25.5	4.4	+
Rajshahi Division—					
Rajshahi	616	1,264	23.5	48.2	—
Dinajpur	613	2,071	15.5	52.5	—
Jalpaiguri	4	263	.1	9.0	—
Darjeeling	662	254	56.9	21.8	+
Rangpur	664	299	19.0	8.5	+
Bogra	362	121	26.2	8.8	+
Pabna	1,057	728	63.0	43.4	+
Malda	498	395	27.2	21.5	+
Dacca Division—					
Dacca .. ..	..	125	..	4.6	—
Mymensingh	1,889	950	30.3	15.2	+
Faridpur	290	795	12.2	33.5	—
Bakarganj	1,236	1,331	35.4	38.1	—
Chittagong Division—					
Chittagong	501	1,198	20.1	48.0	—
Noakhali	443	177	29.2	11.7	+
Tippera	171	3	6.7	.1	+

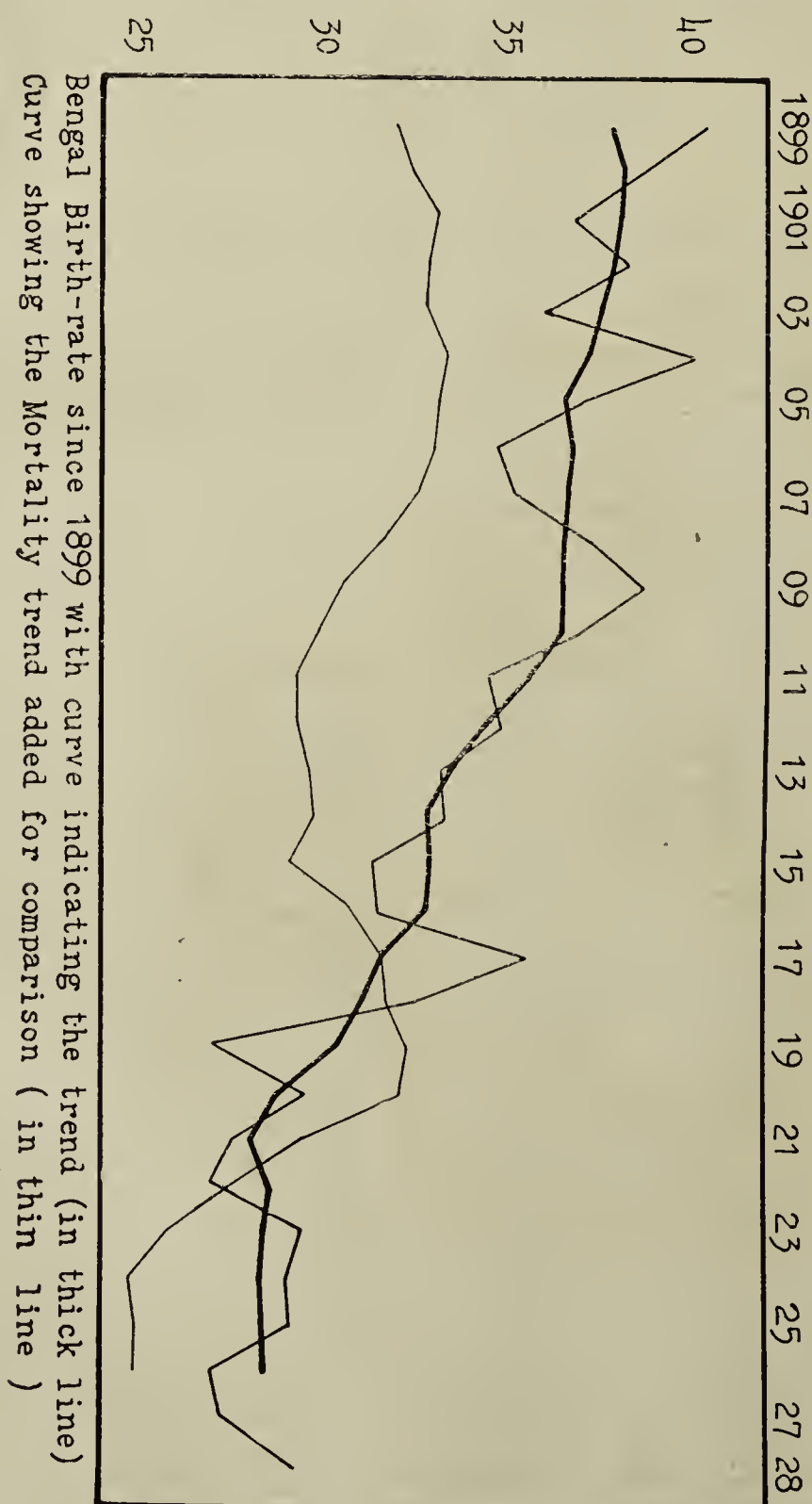
7. Verification of Vital Occurrences.

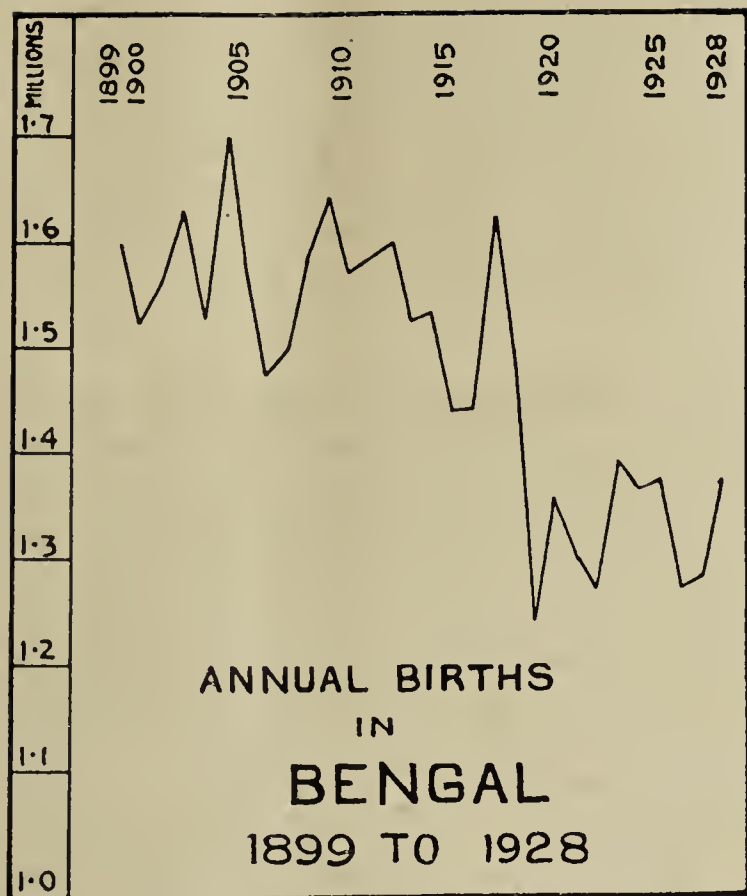
—Out of 117 municipalities, only 32 reported prosecutions for omission to register vital occurrences. Of the 296 cases started, two were withdrawn, 45 struck off, 154 resulted in conviction, 8 in acquittal, and 87 were pending at the close of the year. Jaynagar and Gobardanga municipalities, both in the 24-Parganas, did not submit any report in spite of repeated reminders. This indifference to verify the vital occurrences in the majority of the municipal areas in Bengal has been commented upon year after year in these reports, but all attempts have proved futile so far. Unless some drastic steps are taken to impress upon the local bodies their responsibility in the matter, there seems to be no hope of improvement in the registration of vital occurrences in towns. The working of the Births and Deaths Registration Act which has very recently been applied to the rural areas in Bengal is yet in an elementary

stage and does not offer sufficient data for comment. In spite of the fact that the vaccination inspection staff was generally kept busy throughout the year in controlling the small-pox epidemic in many places, they were able to detect omissions of 4·4 and 1·9 per cent. respectively of the total number of births and deaths examined.

8. Provincial Births and Birth-rates.

—Thirteen lakhs seventy-five thousand six hundred and eighty births (exclusive of still births) of whom 717,586 were males and 658,094 females, giving a ratio of 29·6 per mille of population, were registered during the year, male births being in the ratio of 15·4 to 14·1 females. The birth rate showed an excess of 6·9 per cent. over that of the previous year and 2·8 per cent. over the quinquennial average birth rate. The improvement noticed during the previous year in the trend showing the birth rate was thus maintained in the year under review.





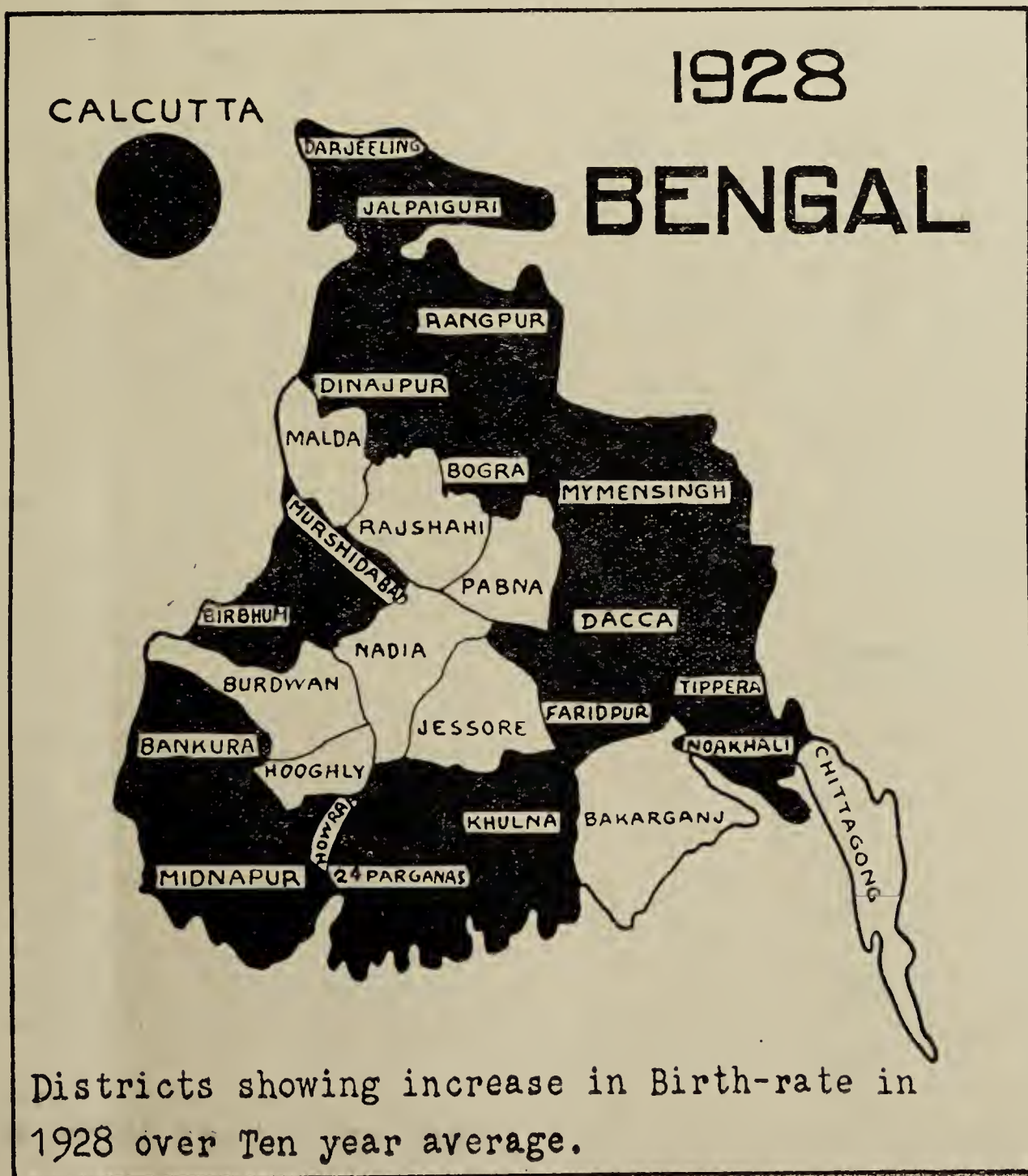
9. **Divisional Birth Rates.**—Rajshahi division again showed the highest and Chittagong division the lowest birth rates. Compared with the previous year the conditions seem to be reversed, Chittagong showing the highest increase and Rajshahi an actual

decrease. As against the decennial mean there was an improvement in all the divisions.

Divisional Birth Rates.

Divisions.	1928.	Decennial mean, 1918-27.	Diff-erence.	Percen-tage varia-tion.	1927.	Diff-erence.	Percen-tage varia-tion.
Burdwan	30.3	29.4	+0.9	+3.0	27.9	+2.4	+8.6
Presidency	29.1	27.7	+1.4	+5.0	26.1	+3.0	+11.5
Rajshahi	31.3	31.1	+0.2	+0.6	31.6	-0.3	-1.0
Dacca	28.6	28.0	+0.6	+2.1	26.5	+2.1	+7.9
Chittagong	28.3	27.2	+1.1	+4.0	25.3	+3.0	+11.8

10. **District Birth Rates.**—Murshidabad as usual registered the highest birth rate and Calcutta the lowest. Eighteen districts showed varying increases and 7 decreases when compared with the average of the previous 10 years, while Malda and Hooghly were stationary in their birth rates. The greatest improvement in this respect appears to have taken place in Darjeeling district, Jessore being at the other pole. As against the previous year 19 recorded an excess and 6 a diminution in the number of their births, Jalpai-guri alone showing the same rate in both the years.



Birth-rate per mille in districts.

Districts.	Average birth-rate for previous ten years .	Birth-rate per mille for 1928.	Difference between birth rates for 1928 and the decennial average.	Percentage of difference.	Birth-rate per mille for 1927.	Difference between birth-rates of 1927 and 1928.	Percentage of difference.
Murshidabad	39·6	42·1	+2·5	+6·3	40·1	+2·0	+5·0
Birbhum ..	36·0	37·5	+1·5	+4·2	36·6	+0·9	+2·4
Dinaipur	34·8	35·8	+1·0	+2·9	38·1	-2·3	-6·1
Bankura	34·1	34·5	+0·4	+1·2	31·8	+2·7	+7·2
Rajshahi	33·6	31·6	-2·0	-6·0	33·9	-2·3	-6·8
Nadia ..	33·5	33·1	-0·4	-1·2	31·0	+2·1	+6·8
Malda ..	33·4	33·4	± 0	± 0	34·2	-0·8	-2·4
Jalpaiguri	32·0	34·0	+2·0	+6·2	34·0	± 0	± 0
Darjeeling	31·5	36·5	+5·0	+15·9	32·3	+4·2	+13·0
Noakhali	31·4	33·2	+1·8	+5·7	31·6	+1·6	+5·0
Rangpur ..	30·6	31·8	+1·2	+3·9	30·2	+1·6	+5·3
Chittagong	30·2	29·0	-1·2	-4·0	27·2	+1·8	+6·6
Bakarganj	30·0	28·1	-1·9	-6·4	25·5	+2·6	+10·2
Burdwan	29·0	28·9	-0·1	-0·3	29·8	-0·9	-3·0
Khulna ..	28·6	32·2	+3·6	+12·6	26·7	+5·5	+20·6
Faridpur	28·5	30·5	+2·0	+7·0	31·4	-0·9	-2·9
Dacca ..	28·2	30·3	+2·1	+7·4	26·7	+3·6	+13·5
Midnapur	28·1	29·9	+1·8	+6·4	26·2	+3·7	+14·1
Howrah ..	27·1	27·8	+0·7	+2·6	24·4	+3·4	+13·9
Pabna ..	26·6	22·6	-4·0	-15·1	26·1	-3·5	-13·4
Mymensingh	26·4	26·8	+0·4	+1·5	24·5	+2·3	+9·4
Jessore ..	25·6	22·9	-2·7	-10·6	23·7	-0·8	-3·4
Hooghly ..	25·5	25·5	± 0	± 0	22·5	+3·0	+13·3
Bogra ..	25·3	28·5	+3·2	+12·6	23·9	+4·6	+19·2
24-Parganas	23·7	26·4	+2·7	+11·4	21·8	+4·6	+21·1
Tippera ..	23·3	25·2	+1·9	+8·1	20·8	+4·4	+21·1
Calcutta ..	16·5	20·4	+3·9	+23·6	15·5	+4·9	+31·6

11. Birth Rates in Towns.—The aggregate birth rate in towns—20·40 per mille in 1928—was higher than that in 1927 by 18·6 per cent. Kurseong as usual recorded the highest birth rate 43·4 per mille; 11 towns registered rates between 30 and 40 per mille, 34 between 20 and 30 per mille, and 71 below 20 per mille. Absurd rates below 10 per mille were returned by the following towns:—

Birth-rates.

	1928.	1927.	Increase + or decrease—.
Dinaipur ..	6·5	9·8	—
Guaripur* ..	6·7	..	..
Kotchandpur ..	7·6	11·3	—
Barrackpur ..	8·3	5·8	+
Joynagar ..	8·9	7·6	+
Jhalakati ..	8·9	5·9	+
Budge-Budge ..	9·1	8·0	+
Bogra ..	9·1	6·6	+
Noakhali ..	9·1	6·0	+
Burdwan ..	9·3	6·1	+
Gobardanga ..	9·4	5·1	+
Comilla ..	9·6	7·4	+

*Started in 1928.

While there appears to have been a nominal improvement in the registration of births in all the towns, mentioned in the last year's report as returning absurd rates, except Dinaipur which has retrogressed, Kotchandpur appears to be a fresh addition to this list.

12. Birth Rate in Rural Areas.—The aggregate birth rate in rural areas was 30·22 per mille, compared with 28·4 per mille in the previous year, and was higher than the latter rate by 6·3 per cent. Nawabganj circle in Malda district again stood on the top of the list with a rate of 85·8 per mille, followed by Sainthia in Birbhum—78·2 per mille, and Joypur in Bankura district—64·8 per mille. Seven circles returned rates between 50 and 60 per mille, 55 between 40 and 50, 216 between 30 and 40, 219 between 20 and 30, and 20 below 20 per mille. Noapara in the 24-Parganas as usual returned the lowest birth rate 8·0 per mille.

13. Conditions affecting Birth Rates according to the District Health Officers' Statements.—In Howrah the low birth rate is ascribed to the loss of fecundity due to constant suffering from malaria year after year; in Jessore while it is partly due to defective registration, general unhealthiness and poverty are the main causes; in Pabna defective registration is probably responsible for it; in Bakarganj, the low birth rate, especially in Baufal, Amtoli, Galachipa, Baranadi and Jhalakati thanas and all the municipalities is due to fever and virulent epidemics of cholera and small-pox which devitalised the population for progeny and destroyed a large number of parent population; in Chittagong, it is mainly due to the fact that many people of this district migrate to Rangoon, Calcutta, Akyab, Persia and Assam to work for their livelihood leaving behind their families for years together, though it is due to some extent to defective registration; in Noakhali, the low birth rate of the town is presumably due to defective registration to a certain extent and also to the fact that owing to erosion of the town most of the inhabitants are compelled to live there without their family.

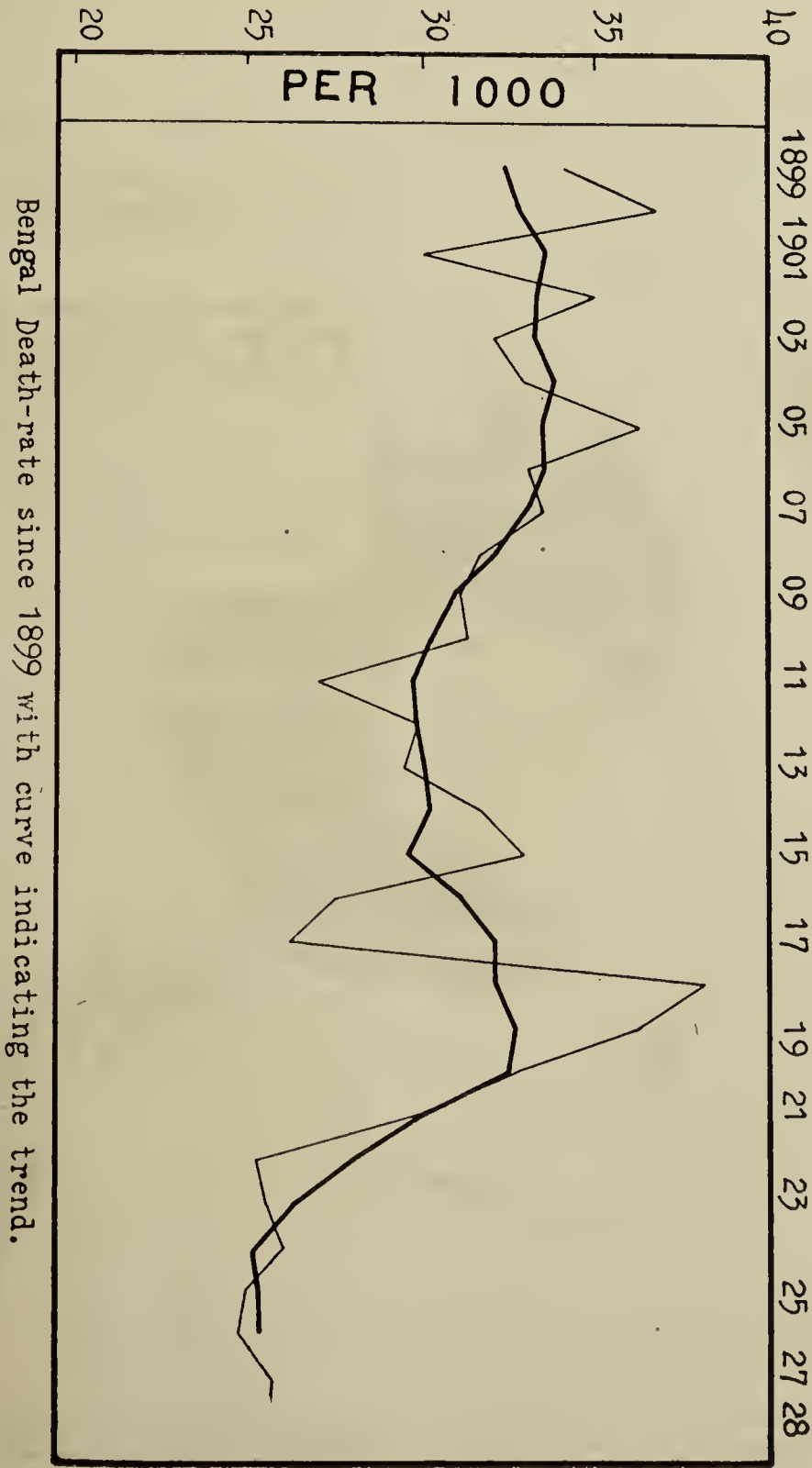
On the other hand the increase in the birth rate in Bogra district appears to

be related to a constant decline of malaria in the last few years and increased rainfall favourably affecting the out-turn of paddy; while in Khulna it may be partly attributed to the more vigilant inspection by the Vaccination Inspecting staff and Sanitary Inspectors, and partly to the system of registration by the Union Boards which on their part are gradually improving in their sense of responsibilities.

14. **Seasonal Incidence of Births.**—The maximum number of births occurred in January, and the minimum in August. The greatest increase, 16·7 per cent., took place in April, and the greatest decrease, 6·7 per cent., in March. Compared with the previous year births diminished in March and May, remained stationary in February, August and November, and increased in the remaining seven months.

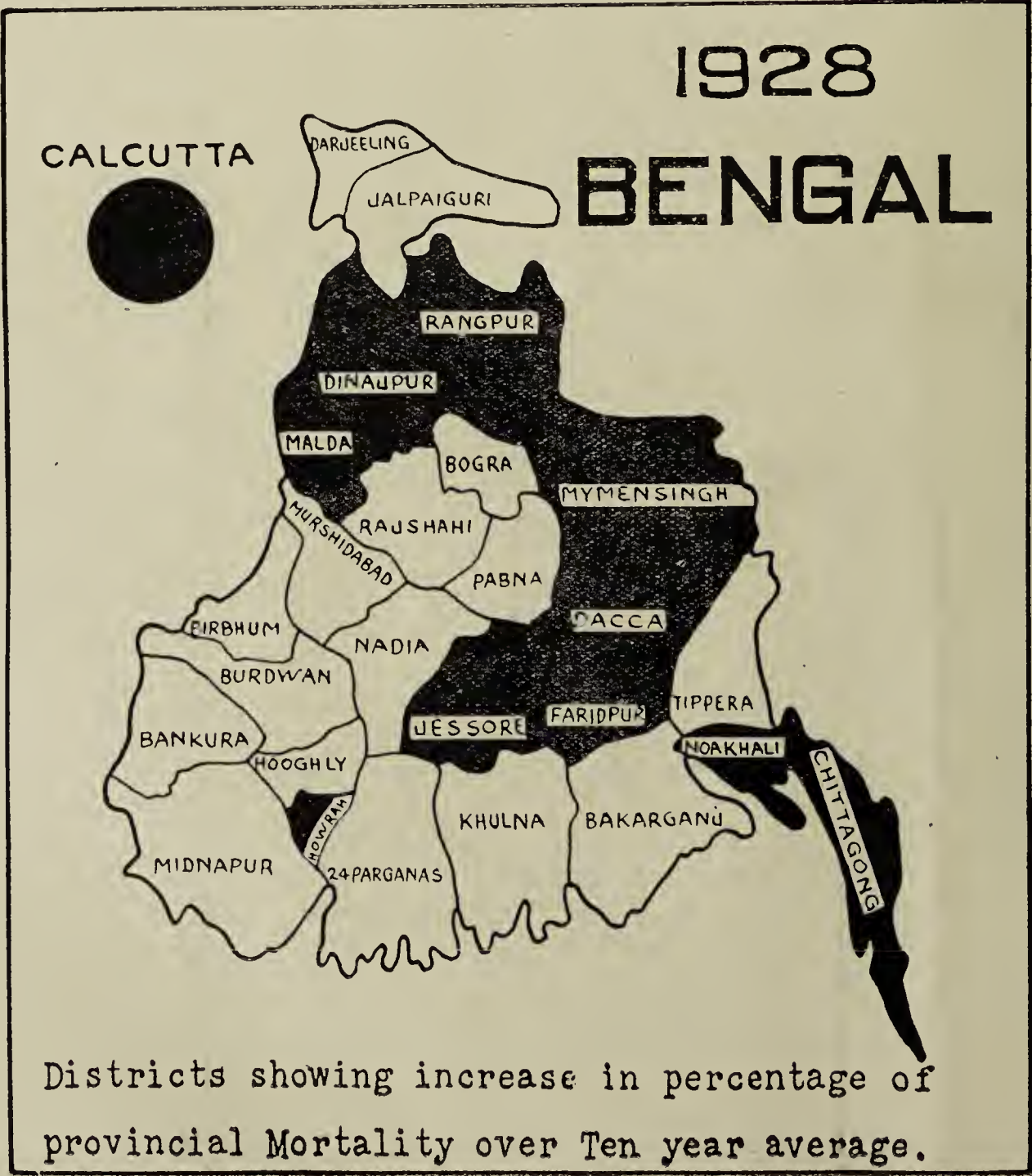
Seasonal Incidence of Births.

Months.	1927.	1928.	Differ- ence.	Per- cen- tage of differ- ence.
January	2·7	3·0	+0·3	+11·1
February	2·5	2·5	±0	±0
March	3·0	2·8	—9·2	—6·7
April	2·4	2·8	+0·4	+16·7
May	2·4	2·3	—0·1	—4·2
June	1·7	1·9	+0·2	+11·7
July	1·5	2·0	+0·5	+13·3
August	1·7	1·7	±0	±0
September	1·9	2·1	+0·2	+10·5
October	2·5	2·6	+0·1	+4·0
November	2·8	2·8	±0	±0
December	2·6	3·0	+0·4	+15·4



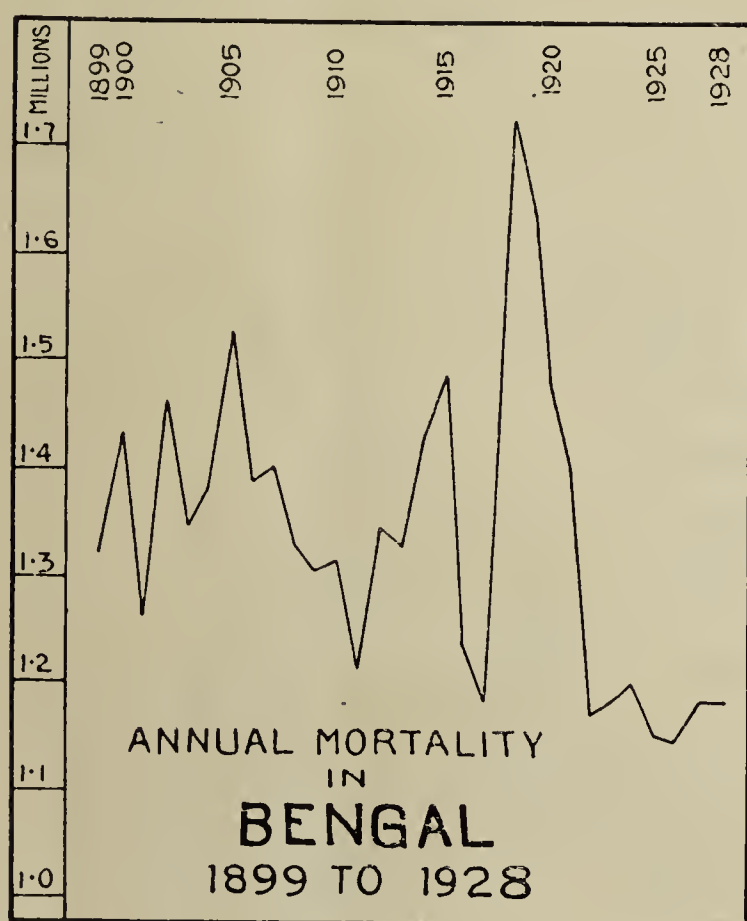
15. **Still Births.**—Compared with the previous year, there were fewer still births during the year under review, the recorded number of such births being 56,530 in 1928 against 58,579 in 1927 showing a decrease of 3·5 per cent. The proportion borne by them to the total number of births in the province was 1 : 24. With the exception of Bankura, Jessore, Dinajpur, Tippera, Bogra, Malda and Bakarganj, there was a diminution in this proportion in every other district compared with the previous year.

Districts.	Proportion of still-births to total births, per cent.		Increase + or decrease—.
	1927.	1928.	
Rangpur	7·90	6·21	—
Calcutta	7·66	6·04	—
Noakhali	6·82	6·64	—
Pabna	6·40	5·32	—
Rajshahi	6·05	5·39	—
Chittagong	5·95	5·78	—
Mymensingh	5·74	5·66	—
Jalpaiguri	5·70	5·60	—
Bogra	5·64	5·66	+
Jessore	5·43	5·58	+
Darjeeling	5·39	4·73	—
Dinajpur	5·03	5·11	+
Dacca	4·88	4·09	—
Murshidabad	4·60	4·11	—
Tippera	4·40	4·60	+
Khulna	4·09	3·38	—
Faridpur	3·32	2·80	—
Birbhum	3·26	2·23	—
Malda	3·03	3·21	+
Midnapur	2·95	2·93	—
Bakarganj	1·96	2·08	+
Nadia	1·86	1·61	—
Howrah	1·62	0·21	—
24-Parganas	1·48	1·29	—
Burdwan	1·14	0·89	—
Hooghly	0·34	0·23	—
Bankura	0·34	0·46	+
Total average for the province	4·35	3·94	—



Deaths and Death Rates.

16. **Provincial Death Rate.**—Eleven lakhs eighty-nine thousand and fifteen deaths comprised of 613,394 males and 575,621 females, occurred during the year compared with 1,189,370 deaths of which 614,685 were males and 574,685 females, in the previous year. The death rate, 25·5 per mille, was thus lower by 3·9 per cent. than that in 1927, and higher by 7·9 per cent. than the quinquennial average. Fevers alone recorded a reduced death rate, small-pox and injuries remaining stationary, while it increased slightly so far as the other heads were concerned.



17. **Divisional Death Rates.**—Burdwan and Presidency divisions registered a lower death rate than the previous year, the remaining three divisions returning slightly higher rates. Compared with the average for the previous decennium, there was a marked improvement in the Western and Northern Bengal, and slight in East Bengal.

Divisions.	Death rate for the previous 10 years.	Death rate per mille, 1928.	Difference.	Percentage of difference.	Death rate per mille, 1927.	Difference.	Percentage of difference.
Burdwan ..	31·5	25·4	-6·1	-19·4	25·8	-0·4	-1·6
Presidency	31·0	26·9	-4·1	-13·2	28·8	-1·9	-6·6
Rajshahi	31·6	28·6	-3·0	-9·5	27·9	+0·7	+2·5
Dacca ..	24·9	23·6	-1·3	-5·2	23·0	+0·6	+2·6
Chittagong	23·6	22·5	-1·1	-4·7	21·5	+1·0	+4·6

18. District Death Rates.—

(a) *Crude death rates.*—Dinajpur with a death rate of 34·5 per mille headed the list, while Tippera as usual with its 17·0 per mille stood at the bottom. Rajshahi, Darjeeling and Calcutta also recorded rates above 30 per mille, while the others between 20 and 30 per mille. With the exception of Calcutta, Chittagong, Faridpur, Dacca and Jessore, all the others showed improvement in varying proportions on the average death rate of the previous decade. In Jessore the rates were stationary but in the remaining four, there was a slight rise. Compared with the previous year 13 districts had a lower and the remaining 14, a higher death rate, Dacca, Chittagong, and Darjeeling showing increases of 24·5, 16·6 and 12·1 per cent. respectively.

Death Rate per mille in Districts.

Districts.	Average death rate for previous 10 years.	Death rate per mille for 1928.	Difference between death rates of 1928 and the decennial average.	Percentage of difference.	Death rate per mille for 1927.	Difference between death rates of 1927 and 1928.	Percentage of difference.
Murshidabad	37·7	29·3	-8·4	-22·3	33·8	-4·5	-13·3
Darjeeling	37·7	31·4	-6·3	-16·7	28·0	+3·4	+12·1
Birbhum	37·5	29·6	-7·9	-21·1	29·1	+0·5	+1·7
Nadia ..	37·0	29·2	-7·8	-21·1	28·1	+1·1	+3·9
Rajshahi	36·8	33·2	-3·6	-9·8	31·6	+1·6	+5·0
Dinajpur ..	35·3	34·5	-0·8	-2·3	34·0	+0·5	+1·5
Burdwan	34·0	26·1	-7·9	-23·2	26·3	-0·2	-0·8
Bankura ..	32·6	23·5	-9·1	-27·9	25·3	-1·8	-7·1
Jalpaiguri	31·9	28·4	-3·5	-11·0	27·3	+1·1	+4·0
Calcutta ..	30·5	31·7	+1·2	+3·9	34·2	-2·5	-7·3
Hooghly ..	30·5	25·8	-4·7	-15·4	24·3	+1·5	+6·2
Malda ..	30·2	27·6	-2·6	-8·6	29·0	-1·4	-4·8
Jessore ..	29·9	29·9	0	±0	29·7	+0·2	+0·7
Midnapur ..	29·5	23·9	-5·6	-19·0	24·1	-0·2	-0·8
Pabna ..	29·1	22·2	-6·9	-23·7	25·4	-3·2	-12·6
Rangpur ..	29·1	28·1	-1·0	-3·4	25·7	+2·4	+9·3
Howrah ..	28·3	26·1	-2·2	-7·8	29·1	-3·0	-10·3
Chittagong	27·8	29·4	+1·6	+5·7	25·2	+4·2	+16·6
Khulna ..	27·8	22·5	-5·3	-19·1	28·1	-5·6	-19·9
Bakarganj	27·3	23·9	-3·4	-12·5	26·7	-2·8	-10·5
Bogra ..	26·7	22·3	-4·4	-16·5	20·5	+1·8	+8·8
24-Parganas	26·7	22·5	-4·2	-15·7	24·1	-1·6	-6·7
Faridpur ..	26·6	26·8	+0·2	+0·7	27·5	-0·7	-2·6
Noakhali	26·6	25·1	-1·5	-5·6	26·1	-1·0	-3·9
Dacca ..	24·1	24·4	+0·3	+1·2	19·6	+4·8	+24·5
Mymensingh	23·5	21·5	-2·0	-8·5	21·1	+0·4	+1·9
Tippera ..	19·6	17·0	-2·6	-13·3	16·8	+0·2	+1·2

(b) *Proportion of the provincial mortality*.—8·7 per cent. of the total number of deaths were registered in Mymensingh followed by 6·4 per cent. in Dacca. Darjeeling, on the other hand, was responsible only for 0·7 per cent. of the total provincial mortality. This proportion appears to have increased in 11 and reduced in 14 others when compared with the mean of the previous ten years; in the remaining two it remains the same.

Percentage of District Deaths to Total Provincial Mortality in 1928.

Districts.	Average for previous 10 years.	1928.	Increase + or decrease —.
Mymensingh ..	8·5	8·7	+0·2
Midnapur ..	5·9	5·4	—0·5
Dacca	5·6	6·4	+0·8
Rangpur	5·5	5·9	+0·4
Bakarganj ..	5·4	5·3	—0·1
24-Parganas ..	4·9	4·7	—0·2
Dinajpur	4·5	4·9	+0·4
Faridpur	4·5	5·1	+0·6
Nadia	4·1	3·6	—0·5
Rajshahi	4·1	4·1	+0
Tippera	4·0	3·9	—0·1
Jessore	3·9	4·3	+0·4
Burdwan	3·7	3·2	—0·5
Murshidabad ..	3·6	3·1	—0·5
Chittagong ..	3·4	4·0	+0·6
Pabna	3·0	2·6	—0·4
Khulna	3·0	2·7	—0·3
Noakhali	2·9	3·1	+0·2
Bankura	2·5	2·0	—0·5
Hooghly	2·5	2·3	—0·2
Calcutta	2·5	2·9	+0·4
Birbhum	2·4	2·1	—0·3
Jalpaiguri	2·2	2·2	±0
Malda	2·2	2·3	+0·1
Howrah	2·1	2·2	+0·1
Bogra	2·1	2·0	—0·1
Darjeeling	0·8	0·7	—0·1

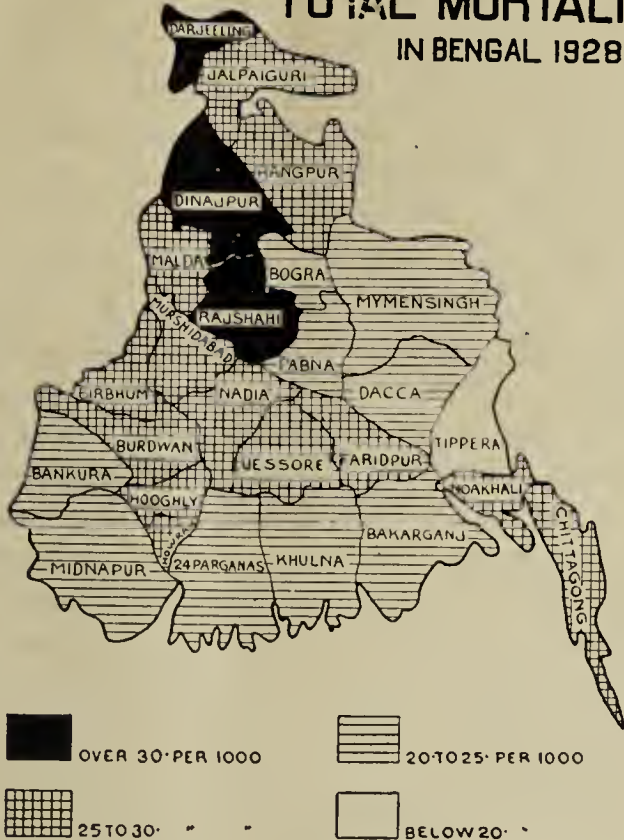
19. **Death Rates in Towns.**—The aggregate death rate in towns in 1928 was 24·1 per mille, as against 25·9 per mille in 1927, showing a decrease of 6·9 per cent. Kurseong returned the highest death rate 43·4 per mille, exactly identical with its birth rate. Nine registered rates between 30 and 40, 30 between 20 and 30, and 77 below 20, of which 10 towns mentioned below recorded absurdly impossible rates:—

Death Rates.

Towns.	1927.	1928.	Increase + or decrease —.
Comilla	7·2	5·6	—
Barrackpur ..	7·2	6·6	—
Kishorganj ..	15·2	8·2	—
Baduria	10·7	8·4	—
Barasat	13·5	8·6	—
Gouripur .. ..	..	8·9	..
Garulia	10·8	9·1	—
Bankura	10·1	9·3	—
Bhola	6·4	9·3	+
Patuakhali ..	12·5	9·4	—

With the exception of Bhola, all the others in the above list returned death rates even lower than what they did in the previous year. This shows a lack of interest of the municipal commissioners to record vital occurrences upon which depend all the improvements in the health conditions of the locality concerned and indirectly of the province as a whole. As mentioned in my Public Health Annual Report for 1923, “in most Bengal towns, as with births, so also with deaths, existing records of vital occurrences, instead of registering the health conditions of these places, merely serve to emphasise the real indifference of those in authority towards public health matters in general.”

MAP SHOWING
TOTAL MORTALITY
IN BENGAL 1928



MAP SHOWING
FEVER MORTALITY
IN BENGAL 1928



MAP SHOWING
CHOLERA MORTALITY
IN BENGAL 1928



MAP SHOWING
INFANT MORTALITY
IN BENGAL 1928



MAP SHOWING
SMALL-POX MORTALITY
IN BENGAL 1928



MAP SHOWING
CHILD MORTALITY
IN BENGAL 1928



20. Death Rates in Rural Areas.—The aggregate crude death rate, 25·7 per mille, was higher than the previous year's rate, 25·5 per mille, by ·8 per cent. Two circles, namely Sainthia in Birbhum and Nawabganj in Malda, returned rates of 76·6 and 71·5 per mille respectively, 4 circles registered death rates between 50 and 60 per mille, 26 between 40 and 50, 128 between 30 and 40, 288 between 20 and 30, and 72 below 20 per mille. As in the previous year, Noapara in the 24-Parganas and Boalia in Rajshahi recorded extremely low rates of 6·7 and 8·0 per mille respectively.

21. Comparison of Death Rates in Towns with those in Rural Areas.—The death rate from all causes in towns was lower than that in the rural areas by 6·2 per cent. Turning to the classification of the causes of deaths cholera, small-pox, and fevers appear to have claimed more victims in rural than urban areas, while dysentery and diarrhoea, respiratory diseases, injuries and other causes were responsible for more deaths in urban areas.

Cause of death.	During 1928.		
	Urban.	Rural.	Combined.
Cholera ..	2·3	3·0	2·9
Small-pox ..	0·5	1·0	0·9
Plague ..	·001	·00005	·0001
Fevers ..	5·3	16·9	16·1
Dysentery and Diarrhoea	2·8	0·6	0·7
Respiratory diseases ..	5·5	0·6	0·9
Injuries ..	0·5	0·4	0·4
Other causes ..	7·1	3·2	3·5
All causes ..	24·1	25·7	25·5

22. Causes of the high Death Rates according to the District Health Officers' Statements.—In Midnapur, the high death rate in Ghatal Municipality and some of the rural areas was particularly due to an epidemic of cholera; in Birbhum district in Suri town it was due to bad drainage system; while in rural areas to cholera and diseases such as dysentery, diarrhoea, typhoid, malaria, etc., following on the period of scarcity of food supply; in Jessore, the general unhealthiness and poverty were the main causes, though it may have been partly due to defective registration; in 24-Parganas it was due

to cholera in Joynagar and Sunderkhali thanas, and to fever in others; in Pabna, defective registration accounted for it to a certain extent; in Bogra, it was accounted for by increase in cholera and fevers; in Darjeeling chiefly to malaria in Siliguri subdivision; and in Hatiya and Sandwip islands in Noakhali district, to scarcity of drinking water, which helps to cause frequent outbreaks of cholera, besides owing to the presence of Char lands in these islands there is constant egress and ingress of people to and from the Char lands during cultivation season, which is a principal factor in the high incidence of cholera in these islands; the large number of embankments raised across the khals to prevent saline water from running into paddy fields is responsible for the high incidence of malaria, the spleen rate amongst children being as high as 70 per cent. in certain areas.

23. Comparison of Calcutta Death Rates with those of other Bengal Towns and Rural Areas.—The total death rate in Calcutta was higher than that in other Bengal towns, and in rural areas by 57·7 and 23·3 per cent. respectively. Calcutta returned a higher rate from dysentery and diarrhoea, respiratory diseases, injuries and other causes and a lower rate for fevers than other towns or rural areas in Bengal; cholera and small-pox accounted for more deaths in rural areas than in Calcutta, but the latter returned a larger proportion of cholera deaths than other towns. Small-pox death rate in Calcutta was the same as in other towns.

Causes.	(Calcutta 1928).	Bengal towns (1928).	Bengal rural areas (1928).
Death rate ..	31·7	20·1	25·7
Cholera ..	2·4	2·3	3·0
Small-pox ..	0·5	0·5	1·0
Plague ..	·004	..	·00005
Fevers ..	4·4	5·8	16·9
Dysentery and diarrhoea ..	3·4	2·5	0·6
Respiratory diseases	9·9	3·2	0·6
Injuries ..	0·6	0·5	0·4
Other causes ..	10·4	5·4	3·2

Under the subsidiary heads, Calcutta reported a heavier mortality from every other disease except from malaria and "other fevers" whose rates were less

and relapsing fever from which no case appears to have been recorded in Calcutta.

Causes.	Death rate per mille in 1928.		
	Calcutta.	Other Bengal towns.	Rural areas.
Malaria ..	1.25	1.44	8.39
Enteric fever ..	.80	.23	.18
Measles ..	.26	.05	.03
Relapsing fever ..	..	.03	.09
Kala-azar ..	.48	.32	.22
Other fevers ..	1.67	3.76	8.02
Dysentery ..	1.67	1.48	.31
Diarrhoea ..	1.69	1.00	.25
Influenza ..	.44	.06	.04
Pneumonia ..	4.05	1.57	.25
Phthisis ..	2.41	.51	.13
Other respiratory diseases ..	2.95	1.04	.16
Childbirth ..	.08	.20	.15

24. Deaths from Maternal Causes (Supplementary Form No. VI-A).—

Seven thousand, two hundred, twenty-six deaths occurred in 1928 within 14 days of child birth as against 4,397 in 1927; they thus exceeded the previous year's number by 64.3 per cent. It appears that within the last six years this number has increased a little more than six-fold. This is certainly due to better registration. Five hundred fifteen of these deaths were recorded in towns, and 6,711 in rural areas against 447 and 3,950 in the previous year.

1928 ..	7,226
1927 ..	4,397
1926 ..	3,228
1925 ..	2,790
1924 ..	1,972
1923 ..	1,185

The divisional details, as given in the table below, show that the largest number of such deaths in 1928 occurred in Rajshahi division, which had the lowest record in the previous year.

Division.	Deaths.	Rate per 1,000 births, 1928.	Rate per 1,000 births, 1927.	Increase + or decrease—.
Burdwan ..	1,431	5.9	3.2	+
Presidency ..	1,206	4.4	4.3	+
Rajshahi ..	2,019	6.2	2.9	+
Dacca ..	1,777	4.8	3.0	+
Chittagong ..	793	4.8	4.1	+
Total ..	7,226	5.2	3.4	+

25. Mortality according to Sex (Annual Form No. II).—

Six lakhs thirteen thousand three hundred ninety-four males and 575,621 females died in 1928, compared with 614,685 and 574,685, respectively, in 1927. One

hundred six males on an average died to every 100 females, the same as in the previous year. The largest number both of male and female deaths was returned from Mymensingh district, and the lowest among both the sexes from Darjeeling. With the exception of Hooghly and Noakhali, male deaths exceeded the female ones in all the other districts.

26. Mortality according to Class (Annual Form No. V).—Taking mortality according to classes, it will be observed from the table below that leaving the other classes, the highest death rates occurred among the Musulmans and the Hindus, with practically very slight difference between them. The Hindu death rate, however, declined, whilst among the Musulmans it showed an excess compared with the previous year. The greatest decrease was noticed among the Christians and the greatest increase among Buddhists.

Deaths among Classes.

Classes.	Ratio of deaths per mille, 1927.	Ratio of deaths per mille, 1928.	Difference.	Percentage of difference.
Christians ..	18.5	16.7	−1.8	−9.7
Hindus ..	25.7	25.3	−0.4	−1.6
Musulmans ..	25.3	25.6	+0.3	+1.2
Buddhists ..	18.8	21.1	+2.3	+12.2
Other classes ..	32.9	33.2	+0.3	+0.9
Total ..	25.6	25.5	−0.1	−0.4

The divisional distribution of the death rate among the two big communities is shown below. While the death rate among Musulmans exceeded that among the Hindus in all the divisions, except Dacca which showed a decline, the greatest difference between Hindu and Musulman deaths appears to have occurred in the Burdwan division, where Musulman population is even less than one-sixth of the Hindus.

Divisional Death Rates.

Divisions.	Hindus.	Musal-mans.	Difference.	Percentage.
Burdwan ..	24.9	27.5	+2.6	+10.4
Presidency ..	26.5	27.6	+1.1	+4.1
Rajshahi ..	27.4	28.6	+1.2	+4.4
Dacca ..	23.8	23.6	−0.2	−0.9
Chittagong ..	21.9	22.7	+0.8	+3.6

Examining the death rate in Burdwan division in detail, it will be noted that the Musulman rate exceeds the Hindu rate in every district except in Birbhum.

In Burdwan and Hooghly where the Musulmans are about one-fourth and one-fifth of the Hindu population, the excess in the death rate is 3·2 and 3·3 per mille respectively, but the highest increase 4·6 per mille is observed in Bankura where the Musulman population is only one-nineteenth of the Hindus.

Districts.	Proportion of Musulmans to Hindu population.	Death rates.		Excess of death rate among Musulmans.
		Hindus.	Musulmans.	
Burdwan	.. 1:4	24·9	28·1	+3·2
Birbhum	.. 1:2	29·5	29·4	—·1
Bankura	.. 1:19	23·7	28·3	+4·6
Midnapur	.. 1:13	23·6	23·7	+·1
Hooghly	.. 1:5	25·2	28·5	+3·3
Howrah	.. 1:4	26·0	26·9	+·9

27. Mortality according to Age (Annual Form No. IV).—(a) The following table shows the death rates at the various age periods :—

Mortality according to Age.

Age periods.	1927. per mille.	1928. per mille.	Differ- ence.	Pereen- tage va- riation.
Under 1 month* ..	95·6	98·6	+3·0	+3·1
1—6 months* ..	47·1	47·5	+0·4	+0·8
6—12 months* ..	35·3	32·0	—3·3	—9·4
Under 1 year* ..	178·0	178·1	+0·1	+0·06
1—5 years ..	36·5	35·2	—1·3	—3·6
5—10 „ ..	12·7	11·9	—0·8	—6·3
10—15 „ ..	9·9	9·5	—0·4	—4·1
15—20 „ ..	15·7	15·4	—0·3	—1·9
20—30 „ ..	17·2	17·3	+0·1	+0·6
30—40 „ ..	18·6	18·9	+0·3	+1·6
40—50 „ ..	22·1	22·6	+0·5	+2·2
50—60 „ ..	34·0	34·1	+0·1	+0·3
60 years and above	70·5	67·5	—3·0	—4·3

*Per 1,000 births.

The death rate among infants calculated per 1,000 births was the highest; the next most dangerous age period was 60 years and above with its 67·5 deaths per mille; at 1·5 years at one end and 50·60 on the other, the death rate ranged between 34 and 35 per mille. The lowest rate occurred between the age period of 10 to 15 years. The death rate thus appears on the whole to decline gradually after the first year of life is over till the age period 10·15 years is reached, after which there is a gradual rise till the end. While the increase was not very marked at any age period except under one month when it was 3·1 per cent. when compared with the previous year's death rate, the decline

of 9·4 per cent. at 6·12 months and of 6·3 per cent. at 5·10 years was significant.

(b) From the table below, it appears that 52 per cent., or a little over half of the total deaths occurred among two sections of the community under the age of 5 years and over 50 years representing about 22 per cent. of the total population of the province, while 48 per cent., or slightly less than half of the deaths were registered among the remaining 78 per cent. of the population whose ages ranged between 5 and 50 years.

Age periods.	Popula- tion.	Pereen- tage of total po- pulation.	Deaths at each age, 1928.	Pereen- tage of total deaths, 1928.
Under 1 year ..	1,370,066	3·0	245,045	20·6
1—5 years ..	4,606,461	9·9	161,965	13·6
5—10 „ ..	7,318,153	15·7	87,417	7·3
10—15 „ ..	5,322,228	11·4	50,750	4·3
15—20 „ ..	4,484,329	9·6	68,934	5·8
20—30 „ ..	8,536,967	18·3	148,174	12·5
30—40 „ ..	6,453,782	13·9	122,198	10·3
40—50 „ ..	4,136,614	8·9	93,315	7·8
50—60 „ ..	2,355,751	5·1	80,447	6·8
60 and above ..	1,937,942	4·2	130,770	11·0

(c) Classification of deaths by sexes at various age periods exactly follows the old line and shows that the extremes of life have more risks for males than for females, though the intervening age periods are more dangerous for the latter owing to troubles connected with child-birth.

Age periods.	Death rate per 1,000 living at various ages.			
	Males.	Females.	Differ- ence.	Pereen- tage.
Infants* ..	183·2	172·6	+10·6	+6·1
1—5 years ..	37·1	33·4	+3·7	+11·1
5—10 „ ..	12·6	11·2	+1·4	+12·5
10—15 „ ..	9·3	9·8	—0·5	—5·1
15—20 „ ..	13·1	17·5	—4·4	—25·2
20—30 „ ..	14·9	19·7	—4·8	—24·4
30—40 „ ..	18·1	20·0	—1·9	—9·5
40—50 „ ..	23·2	21·7	+1·5	+6·9
50—60 „ ..	36·2	31·9	+4·3	+13·5
Over 60 „ ..	72·7	62·2	+10·5	+16·9

* Per 1,000 births.

28. Provincial Infant Mortality (Annual Form No. IV).—Two lakhs forty-five thousands forty-five infants comprising 131,453 males and 113,592 females giving death rates of 178·1, 183·2, and 172·6 per 1,000 births, died during the year compared with 229,078,

121,963 and 107,115 respectively, with ratios of 178·0, 182·0 and 173·7 in the previous year. The total deaths increased by 6·9 per cent.—male deaths by 7·7 and female deaths by 6·05 per cent. One hundred and sixteen male infants died to 100 females. A little over one-fifth of the total number of deaths in the province occurred among infants. Fifty-five decimal four per cent. of the total infant mortality occurred among infants under one month of age, 26·7 between 1 and 6 months, and the remaining 17·9 per cent. at age periods between 6 and 12 months.

29. Infant Mortality in Districts.—

(a) Compared with the average of the previous decade, infant mortality declined in every district except Rangpur and Jessore where the excess was almost infinitesimal. The last column of the table below shows the percentage of infant mortality to total deaths. From this it will appear that the highest percentage, 26·4, was registered in the Rangpur district, and the lowest, 13·6, in Jessore.

Infant Death rates in Districts.

Districts.	Average death rate, 1918-27.	1928.	Difference.	Percentage of infant mortality to total mortality, 1928.
Calcutta ..	328	276	-52	17·8
Birbhum ..	239	191	-48	24·3
Burdwan ..	235	186	-49	20·7
Rajshahi ..	226	203	-23	19·4
Dinajpur ..	226	212	-14	22·0
Nadia ..	225	206	-19	23·4
Rangpur ..	218	234	+16	26·4
Khulna ..	216	181	-35	25·9
Bakarganj ..	213	172	-41	20·1
Howrah ..	209	195	-14	20·7
Bogra ..	209	192	-17	24·6
Bankura ..	208	169	-39	24·9
Hooghly ..	206	183	-23	18·0
Jalpaiguri ..	205	190	-15	22·7
Murshidabad ..	202	162	-40	23·3
Midnapur ..	193	150	-43	18·7
Mymensingh ..	191	178	-13	22·2
Faridpur ..	190	186	-4	21·2
Pabna ..	187	185	-2	18·9
Darjeeling ..	185	150	-35	17·5
Dacca ..	179	172	-7	21·4
24-Parganas ..	178	142	-36	16·7
Jessore ..	172	178	+6	13·6
Malda ..	161	152	-9	18·4
Chittagong ..	160	158	-2	15·6
Noakhali ..	155	135	-20	17·8
Tippera ..	148	130	-18	19·3

(b) More males died than females in every other district except Darjeeling, Jessore and Chittagong, where the female mortality exceeded that among the males. Compared with the previous decennium, both male and female infant mortality showed a decrease in 1928 in all the districts with the exception of Rangpur and Jessore; in Pabna, however, the male deaths registered an excess and the female deaths a decline, while in Chittagong the conditions were reversed.

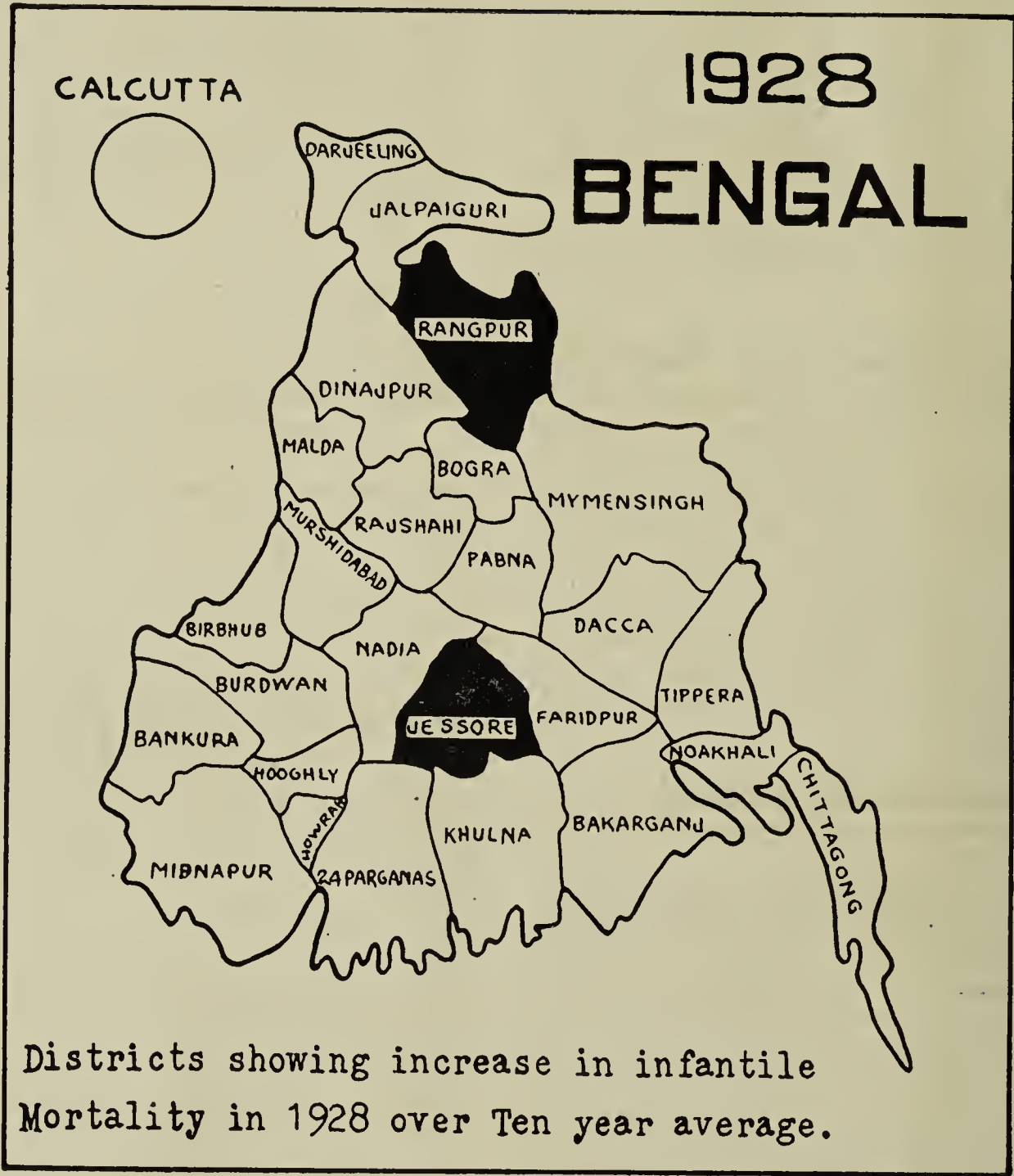
Infant Mortality Rates for each District per 1,000 Births according to sexes.

Districts.	Male death rate.			Female death rate.			Increase + or decrease — of male compared with female deaths, 1928.
	Average for the previous 10 years.	Year 1928.	Increase or decrease.	Average for the previous 10 years.	Year 1928.	Increase or decrease.	
Calcutta ..	330·8	277·3	-53·5	324·7	274·2	-50·5	+3·1
Birbhum ..	252·1	203·7	-48·4	225·7	178·4	-47·3	+25·3
Burdwan ..	244·0	196·4	-47·6	225·3	175·8	-49·5	+20·6
Rajshahi ..	229·4	207·9	-21·5	222·5	198·8	-23·7	+9·1
Dinajpur ..	234·3	217·3	-17·0	217·3	206·6	-10·7	+10·7
Nadia ..	226·9	210·6	-16·3	223·6	201·4	-22·2	+9·2
Rangpur ..	228·0	241·2	+13·2	208·0	225·4	+17·4	+15·8
Khulna ..	220·7	187·2	-33·5	211·6	174·1	-37·5	+13·1
Bakarganj ..	224·0	177·3	-46·7	201·9	165·6	-36·3	+11·7
Howrah ..	217·9	198·7	-19·2	200·0	190·4	-9·6	+8·3
Bogra ..	213·9	196·1	-17·8	203·6	188·0	-15·6	+8·1
Bankura ..	218·5	180·2	-38·3	197·8	157·8	-40·0	+22·4
Hooghly ..	213·0	185·7	-27·3	185·2	179·6	-5·6	+6·1
Jalpaiguri ..	212·9	193·3	-19·6	197·2	186·4	-10·8	+6·9
Murshidabad ..	207·7	172·9	-34·8	204·8	151·3	-53·5	+21·6
Midnapur ..	194·8	151·5	-43·3	191·9	148·1	-43·8	+3·4
Mymensingh ..	197·0	185·2	-11·8	184·4	170·0	-14·4	+15·2
Faridpur ..	194·8	192·4	-2·4	185·4	179·3	-6·1	+13·1
Pabna ..	187·8	188·0	+0·2	185·4	182·7	-2·7	+5·3
Darjeeling ..	193·0	148·4	-44·6	177·1	152·9	-24·2	-4·5
Dacca ..	185·5	178·2	-7·3	171·5	165·9	-5·6	+12·3
24-Parganas ..	181·2	146·8	-34·4	173·9	137·7	-36·2	+9·1
Jessore ..	170·8	174·7	+3·9	172·8	180·9	+8·1	-6·2
Malda ..	161·6	155·5	-6·1	159·8	148·2	-11·6	+7·3
Chittagong ..	162·4	157·5	-4·9	157·8	158·4	+0·6	-0·9
Noakhali ..	155·5	135·4	-20·1	153·7	134·3	-19·4	+1·1
Tippera ..	155·5	136·3	-19·2	138·9	122·4	-16·5	+13·9

30. Infant Death Rates in Towns and Rural Areas.—The infant death rates showed a decrease by 12·9 per cent. in towns, and an excess of 0·7 per cent.

in rural areas over those in the previous year. The town death rate exceeded the rural rate by 13·4 per cent. against 25·1 per cent. in the previous year.

31. **Seasonal Incidence of Mortality.**—The provincial total mortality in 1928 exceeded the decennial average only in April, but was less in other months



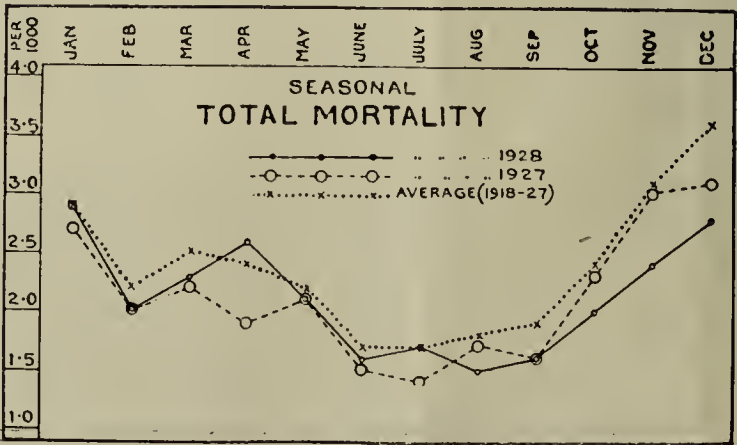
Infant Death Rates in Towns and Rural Areas.

Years.		Towns.	Differ- ence.	Percen- tage.
1927	..	.. 234·2	-30·1	-12·9
1928	..	.. 204·1		

Years.		Rural areas.	Differ- ence.	Percen- tage.
1927	..	.. 175·5	+1·3	+0·7
1928	..	.. 176·8		

Years.		Towns.	Rural areas.	Differ- ence.	Percen- tage.
1927	..	234·2	175·5	-58·7	-25·1
1928	..	204·1	176·8	-27·3	-13·4

of the year except in January and July when it remained the same. Compared with 1927, it showed an increase in January, March, April, June and July, a decrease in August, October, November and December, and no change in February, May and September.



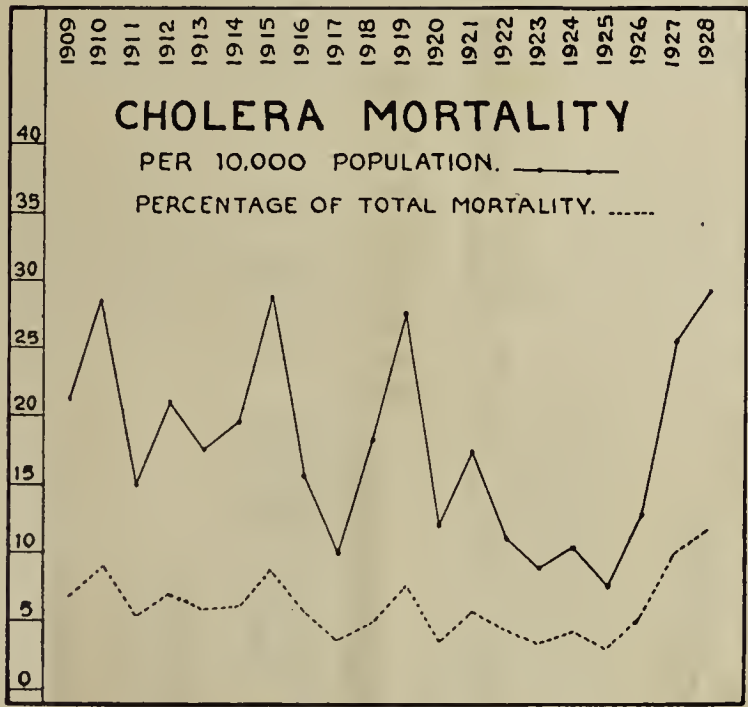
SECTION VI.

History of the Chief Diseases.

Cholera.

32. **General Prevalence.**—The total number of deaths from cholera 136,245 exceeded the previous year's mortality 118,377 by 17,868 and the death rate by 16·0 per cent. It exceeded the quinquennial mean by 123·1 per cent. and the decennial average by 93·3 per cent. Cholera was responsible for 11·5 per cent. of the total mortality as against 9·9 per cent. in the previous year. The diagram on the next page shows the incidence of cholera in the various provinces of India during the year under review.

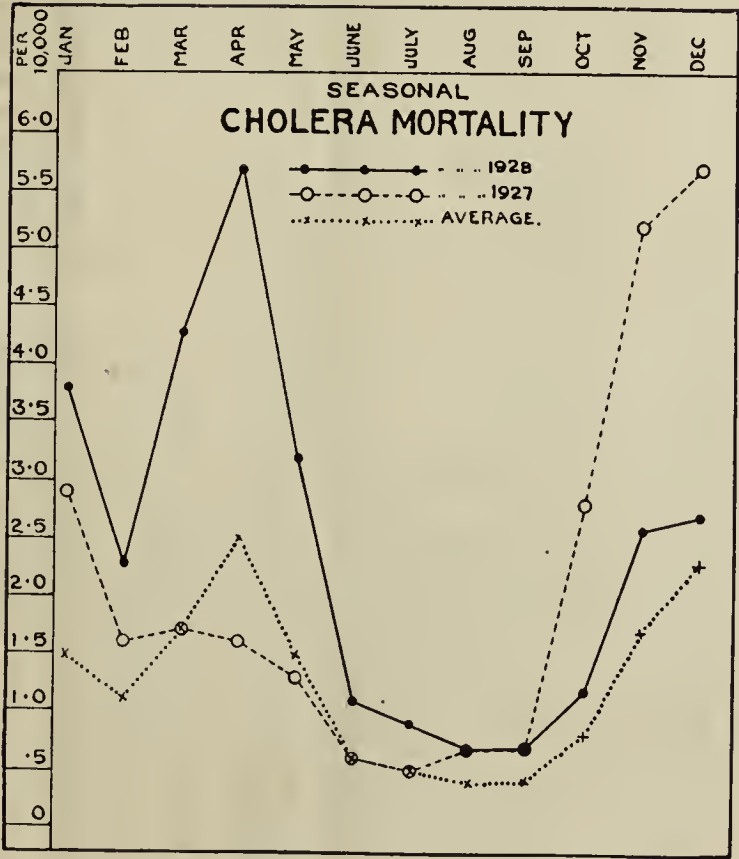
		1927	1928.
Total deaths	.. ..	118,377	136,245
Death rate	.. ..	2·5	2·9
Percentage of cholera deaths to total mortality	.. ..	9·9	11·5



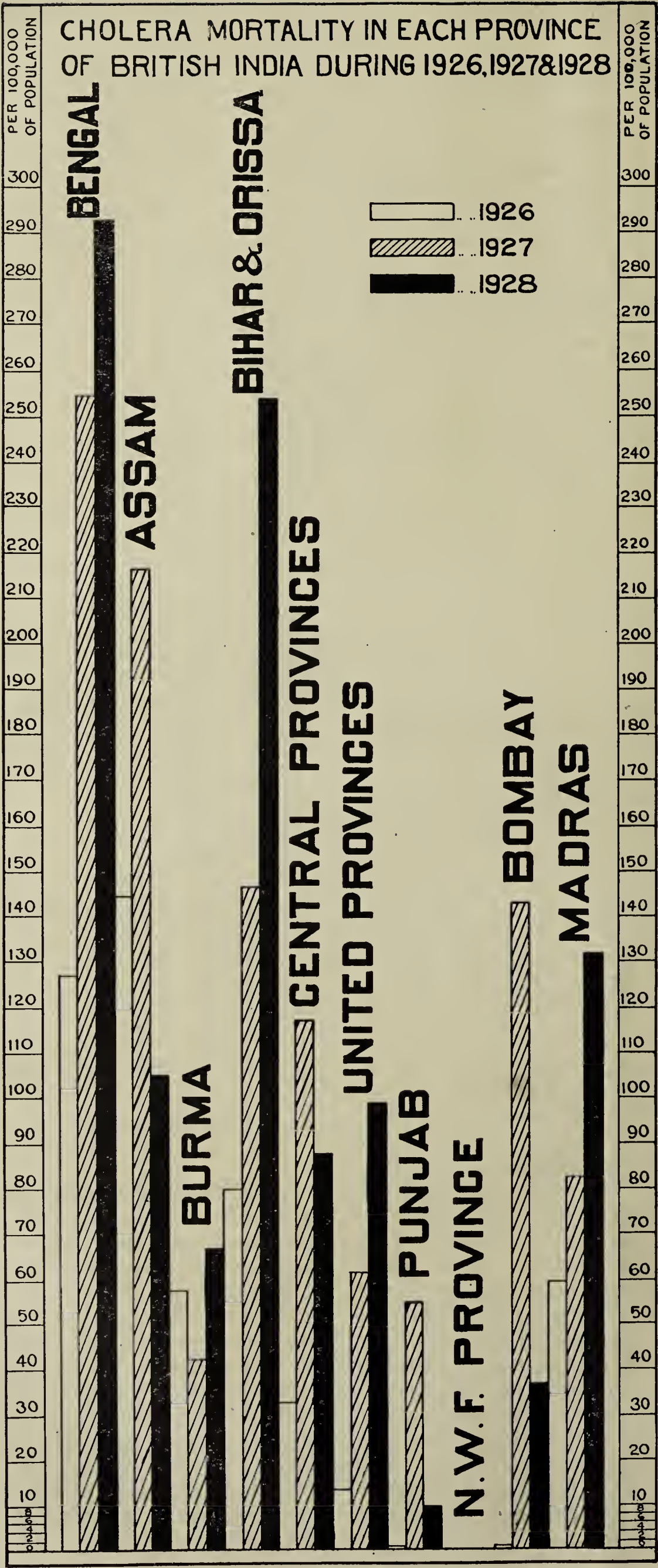
33. **Seasonal Prevalence.**—(a) The mortality from this cause starting on its rise in October of last year continued as such with slight fluctuations till it reached its maximum in April, then gradually declined attaining its minimum in August after which it gradually rose again till the close of the year. It was higher than the average decennial rate in every month of the year, especially in April. Compared with the previous year it was higher than the latter till July, after which it coincided with the other in August and September, showing a gradual decrease in the remaining three months.

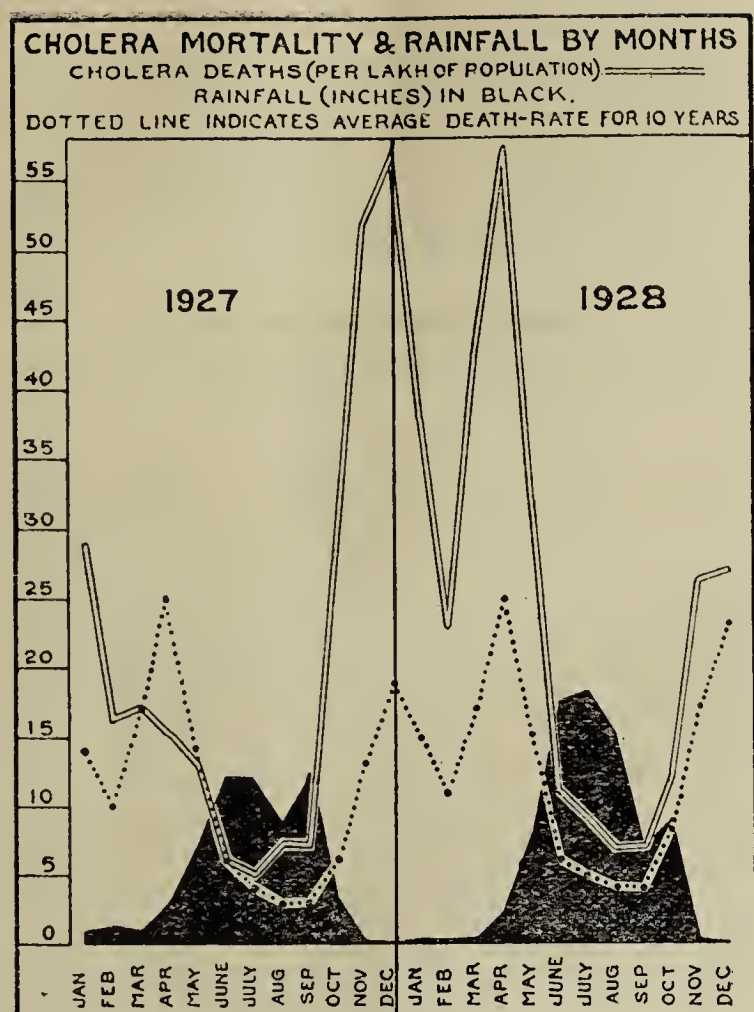
Seasonal Cholera Mortality.

Months		Average, 1918-27.	1927	1928.
January	.. ..	1·5	2·9	3·8
February	.. ..	1·1	1·6	2·3
March	.. ..	1·7	1·7	4·3
April	.. ..	2·5	1·6	5·7
May	.. ..	1·5	1·3	3·2
June	.. ..	·6	·6	1·1
July	.. ..	·5	·5	·9
August	.. ..	·4	·7	·7
September	.. ..	·4	·7	·7
October	.. ..	·8	2·8	1·2
November	.. ..	1·7	5·2	2·6
December	.. ..	2·3	5·7	2·7



(b) **Cholera mortality and the rainfall.**—True to its normal relationship cholera death rate varied in inverse ratio to the rainfall. The rainfall was highest from June to September in 1927 when it started on its decline and remained as such till April 1928 when it commenced to rise again till August when the decline began. Cholera death rate correspondingly rose during the dry months of the year and declined when the rainy season started to reach its second summit during the next rainless weather in November and December.



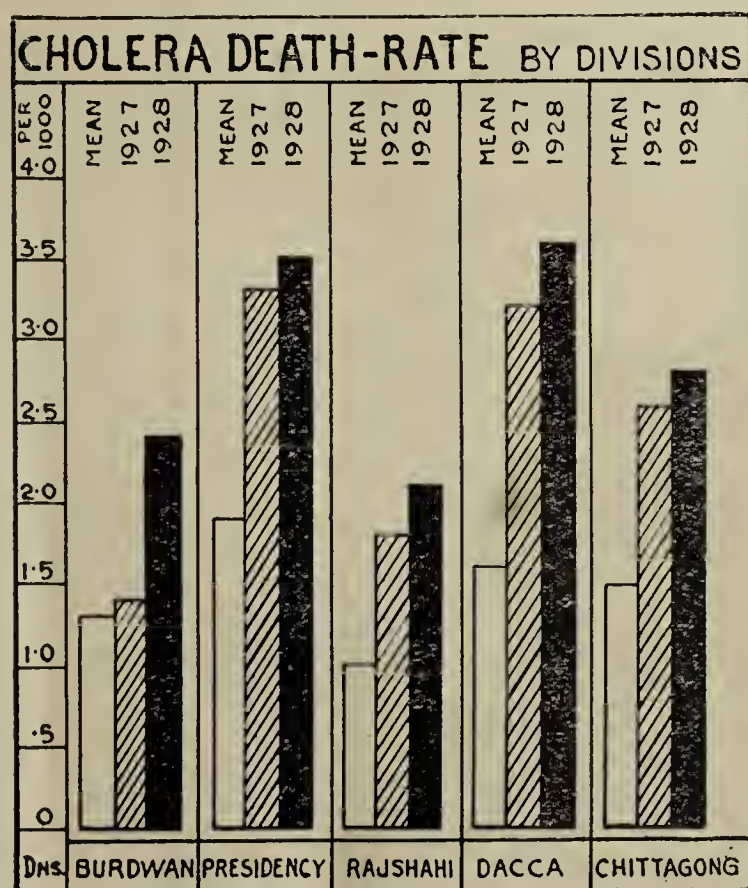


(b) The highest mortality from cholera 15.3 per cent. of the total divisional deaths due from all causes occurred in the Dacca Division and the lowest 7.2 in Rajshahi. From the point of view of cholera, the greatest retrogression in health is noticeable in the Dacca Division within the last ten years, Presidency and Chittagong being the next worst, though compared with the previous year, it is Burdwan Division where the mortality was practically doubled that appears to be the worst.

Proportion of total mortality due to Cholera.

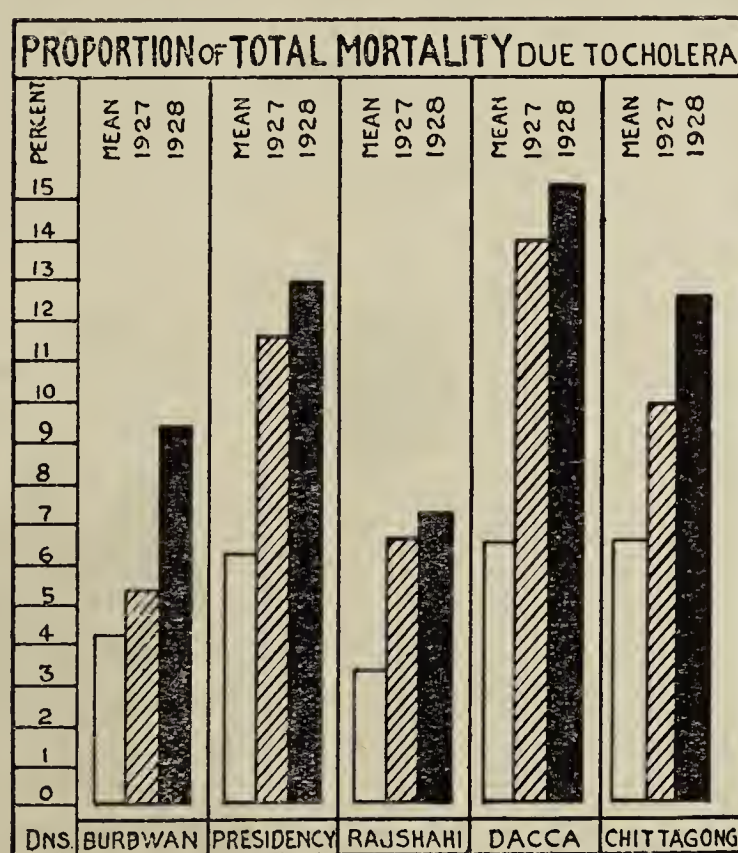
Divisions.	Mean, 1918-27.	1927.	1928.
Burdwan ..	4.2	5.3	9.4
Presidency ..	6.2	11.6	12.9
Rajshahi ..	3.3	6.6	7.2
Dacca ..	6.5	13.9	15.3
Chittagong ..	6.5	9.9	12.5

34. **Cholera by Divisions.**—(a) The crude death rate from cholera exceeded that of the previous year in every division, markedly so in Burdwan. It was much higher than the average of the previous decennium especially in Dacca and Presidency Divisions.



Cholera Death-Rates by Divisions per mille of Population.

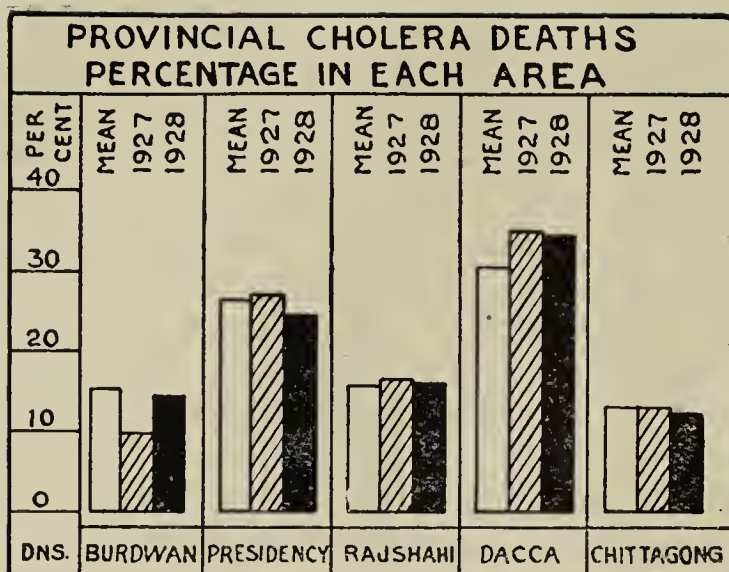
Divisions.	Mean, 1918-27.	1927.	1928.
Burdwan ..	1.3	1.4	2.4
Presidency ..	1.9	3.3	3.5
Rajshahi ..	1.0	1.8	2.1
Dacca ..	1.6	3.2	3.6
Chittagong ..	1.5	2.6	2.8



(c) 34.1 per cent. or a little over one-third of the total cholera deaths in the province occurred in the Dacca Division alone. This percentage exceeded the decennial rate in Rajshahi and Dacca Divisions and that of the previous year in Burdwan but was reduced in others.

Percentages of the total Provincial Cholera Deaths.

Divisions.	Mean, 1918-27.	1927.	1928.
Burdwan ..	15.2	9.4	14.1
Presidency ..	26.3	26.7	24.1
Rajshahi ..	15.5	16.2	15.6
Dacca ..	30.1	34.8	34.1
Chittagong ..	12.9	12.9	12.0

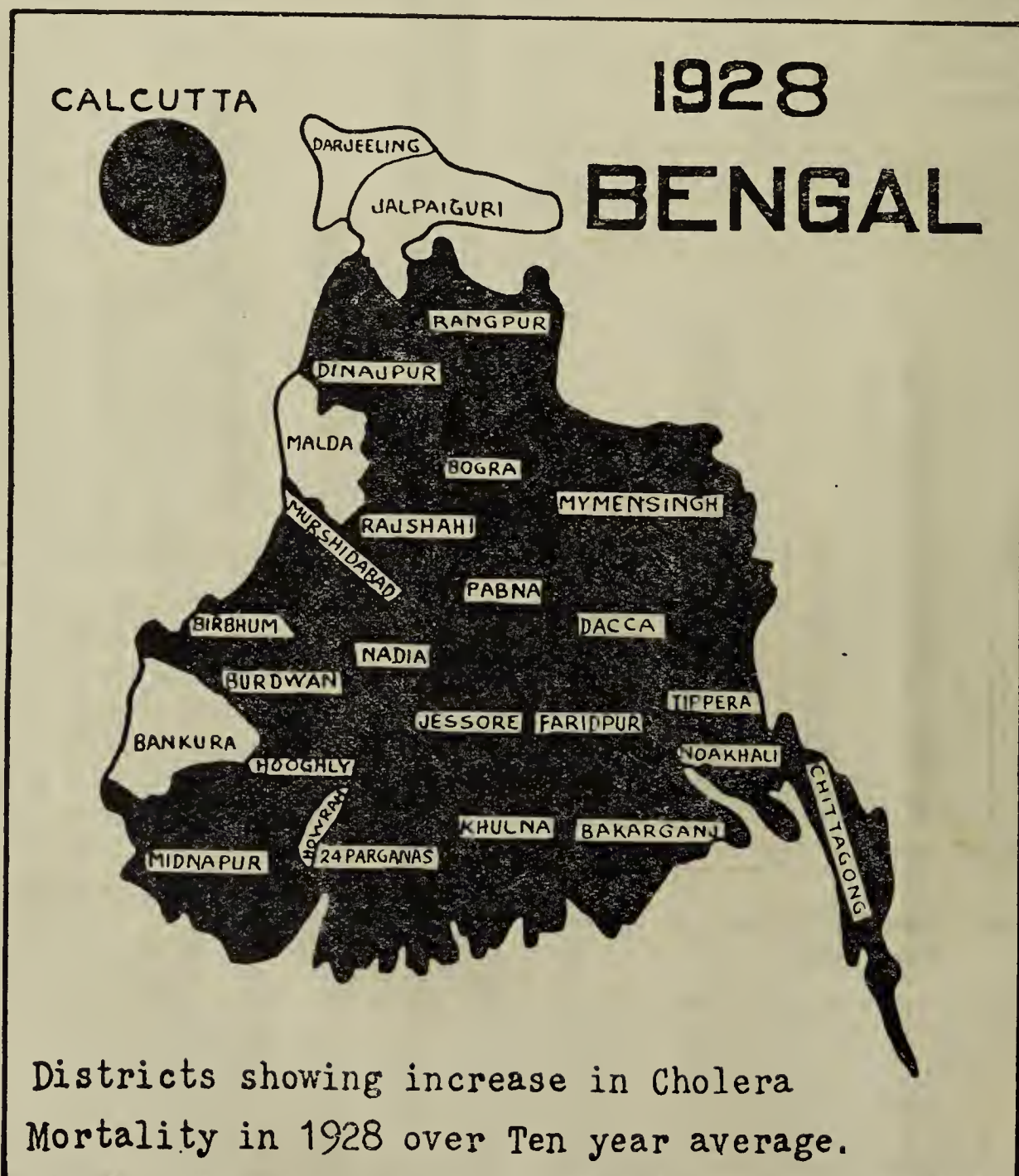


35. **Cholera in districts—(a) Crude Death-rates.**—24-Parganas returned the highest death rate from cholera 5.1 per mille. Howrah, Rajshahi, Faridpur and Dacca registered rates between 4 and 5 per mille, 5 others between 3 and 4, 11 between 2 and 3, 2 between 1 and 2 and the remaining 4 below 1.0 per mille, the lowest rate 0.4 being recorded in Darjeeling. The death rate exceeded the average decennial rate in all the districts except in Malda, Jalpaiguri, Darjeeling and Bankura. This excess

was 15.0 per cent. or above it in Rajshahi, Faridpur, Dacca, Hooghly and Nadia. Compared with the previous year the death rate was increased in 18, reduced in 7 and remained the same in Tippera and Bankura.

Cholera Death-rate per mille.

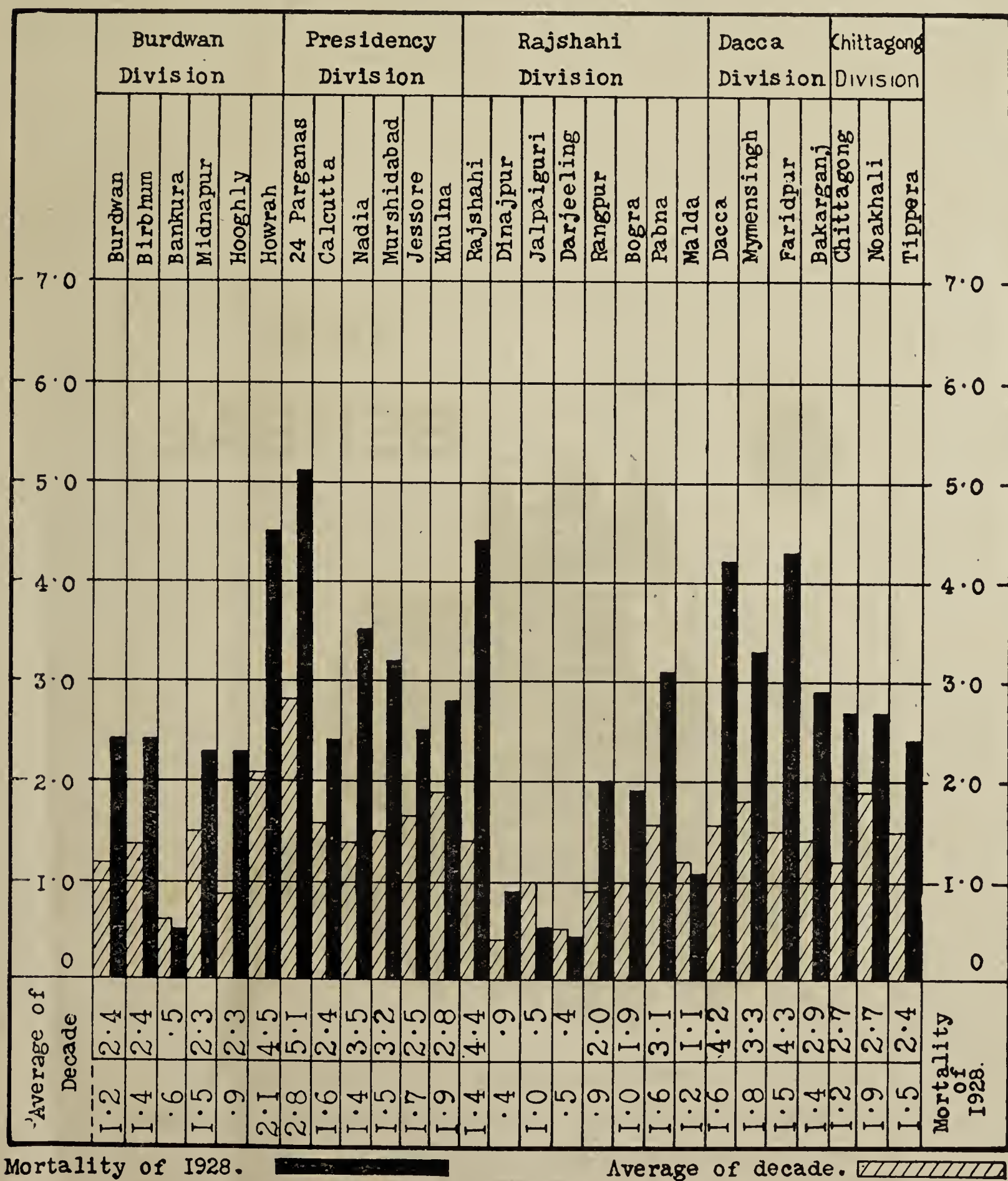
District.	Decennial ave- rage.	1928.	or + - Increase decrease	Percentage of + - increase decrease	1927.	or + - Increase decrease	Percentage of + - increase decrease
24-Parganas	2.8	5.1	+2.3	+ 82.1	4.1	+1.0	+24.4
Howrah ..	2.1	4.5	+2.4	+114.3	3.7	+0.8	+21.6
Noakhali ..	1.9	3.7	+1.8	+ 94.7	4.2	-0.5	-11.9
Khulna ..	1.9	2.8	+0.9	+ 47.3	4.8	-2.0	-41.7
Mymensingh	1.8	3.3	+1.5	+ 83.3	3.4	-0.1	- 3.0
Jessore ..	1.7	2.5	+0.8	+ 47.0	3.0	-0.5	-16.7
Caleutta ..	1.6	2.4	+0.8	+ 50.0	2.0	+0.4	+20.0
Dacca ..	1.6	4.2	+2.6	+162.5	2.6	+1.6	+61.5
Pabna ..	1.6	3.1	+1.5	+ 93.7	2.6	+0.5	+19.2
Tippera ..	1.5	2.4	+0.9	+ 60.0	2.4	± 0	± 0
Midnapur ..	1.5	2.3	+0.8	+ 53.3	1.3	+1.0	+76.9
Murshidabad	1.5	3.2	+1.7	+113.3	3.0	+0.2	+ 6.6
Faridpur ..	1.5	4.3	+2.8	+186.6	3.9	+0.4	+10.2
Birbhum ..	1.4	2.4	+1.0	+ 71.4	0.8	+1.6	+200.0
Rajshahi ..	1.4	4.4	+3.0	+214.3	2.8	+1.6	+57.1
Bakarganj	1.4	2.9	+1.5	+107.1	3.0	-0.1	- 3.4
Nadia ..	1.4	3.5	+2.1	+150.0	2.3	+1.2	+52.2
Malda ..	1.2	1.1	-0.1	- 8.3	5.2	-4.1	-78.9
Burdwan ..	1.2	2.4	+1.2	+100.0	1.1	+1.3	+118.2
Chittagong	1.2	2.7	+1.5	+125.0	1.6	+1.1	+68.7
Bogra ..	1.0	1.9	+0.9	+ 90.0	1.3	+0.6	+46.1
Jalpaiguri	1.0	0.5	-0.5	- 50.0	0.1	+0.4	+400.0
Rangpur ..	0.9	2.0	+1.1	+122.2	1.1	+0.9	+81.8
Hooghly ..	0.9	2.3	+1.4	+155.5	1.2	+1.1	+91.6
Bankura ..	0.6	0.5	-0.1	- 16.7	0.5	± 0	± 0
Darjeeling..	0.5	0.4	-0.1	- 20.0	0.1	+ .39	+3,900.0
Dinajpur ..	0.4	0.9	+0.5	+125.0	1.1	-0.2	-18.2



(b) *The relative importance of cholera as a cause of death.*—22·7 per cent. of the total deaths occurring in 24-Parganas were due to cholera, while this proportion was only 1·3 in Darjeeling district. In all the districts except Malda and Jalpaiguri where it was

reduced and Darjeeling which showed no change, cholera mortality was responsible for a larger proportion of the total deaths in 1928 than it was during the previous decennium. Compared with 1927, no less than 19 districts showed a higher proportion.

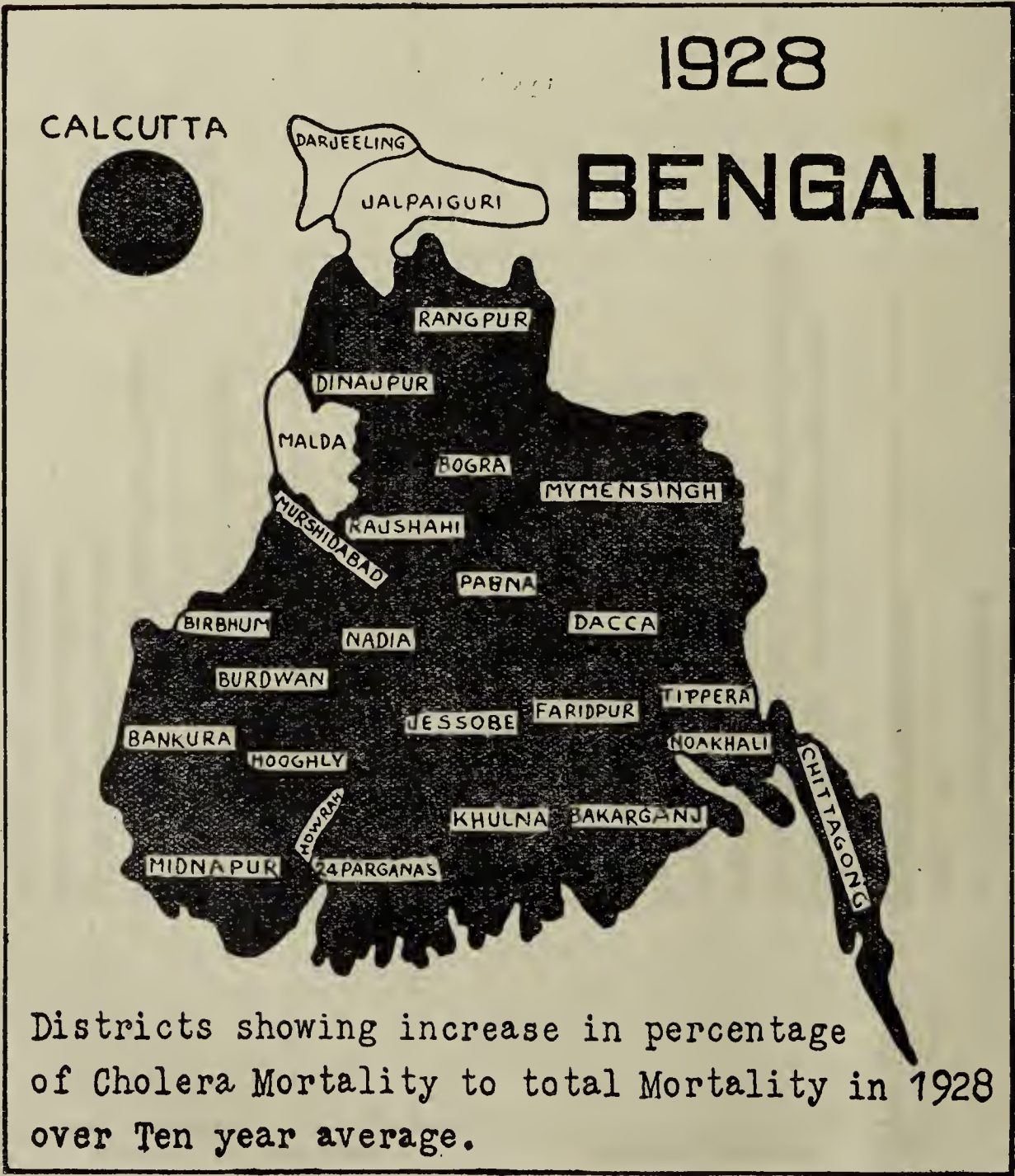
Graph showing the Relative Intensity of Cholera Mortality in each district of Bengal Presidency during the year 1928 and the Average of Decade 1918—27.



Cholera as a percentage of total mortality.

Districts.	Decennial ave- rage.	1928.	or + - Increase decrease	1927.	or + - Increase decrease
24-Parganas ..	10.3	22.7	+12.4	16.9	+ 5.8
Tippera ..	7.8	13.9	+ 6.1	14.2	- 0.3
Mymensingh ..	7.7	15.2	+ 7.5	16.2	- 1.0
Howrah ..	7.3	17.2	+ 9.9	12.7	+ 4.5
Noakhali ..	7.3	14.8	+ 7.5	16.0	- 1.2
Khulna ..	6.9	12.6	+ 5.7	17.2	- 4.6
Dacca ..	6.8	17.2	+10.4	13.2	+ 4.0
Jessore ..	5.8	8.3	+ 2.5	10.2	- 1.9
Faridpur ..	5.6	16.2	+10.6	14.1	+ 2.1
Pabna ..	5.5	14.1	+ 8.6	10.1	+ 4.0
Calcutta ..	5.4	7.6	+ 2.2	5.9	+ 1.7
Midnapur ..	5.1	9.7	+ 4.6	5.3	+ 4.4
Bakarganj ..	5.1	12.2	+ 7.1	11.1	+ 1.1
Chittagong ..	4.2	9.2	+ 5.0	6.5	+ 2.7
Malda ..	4.1	3.9	- 0.2	17.9	-14.0
Murshidabad ..	4.0	11.1	+ 7.1	9.0	+ 2.1
Bogra ..	3.9	8.7	+ 4.8	6.4	+ 2.3
Rajshahi ..	3.8	13.4	+ 9.6	8.9	+ 4.5
Birbhum ..	3.8	8.0	+ 4.2	2.7	+ 5.3
Nadia ..	3.7	12.1	+ 8.4	8.1	+ 4.0
Burdwan ..	3.5	9.2	+ 5.7	4.0	+ 5.2
Rangpur ..	3.2	7.1	+ 3.9	4.4	+ 2.7
Jalpaiguri ..	3.1	1.9	- 1.2	4.8	- 2.9
Hooghly ..	2.9	9.0	+ 6.1	5.1	+ 3.9
Bankura ..	1.8	2.3	+ 0.5	1.8	+ 0.5
Dinajpur ..	1.3	2.7	+ 1.4	3.4	- 0.7
Darjeeling ..	1.3	1.3	± 0	0.4	+ 0.9

(c) *Districts as cholera centres.*—The maximum number of the total cholera deaths 11.6 per cent. occurred in Mymensingh district and the minimum 0.1 in Darjeeling. About three-fifths of the total cholera deaths occurred in 9 districts of which 4 are situated in the Dacca Division, two others Tippera and Noakhali have river communications with Dacca and Mymensingh districts; Jessore, 24-Parganas and Midnapur being also similarly connected with one another. Compared with the previous decennium the percentage of provincial cholera mortality was increased in 12 and reduced in 14 districts while it remained unchanged in the Pabna district. It exceeded the previous year's percentage in 16 and was lower than it in 10 districts while it was stationary in Bankura.



Percentage of Provincial Cholera Mortality in each district.

Districts.	Decennial average.	1928.	or + - increase decrease	1927.	or + - increase decrease
Mymensingh ..	12.6	11.6	-1.0	14.0	-2.4
24-Parganas ..	9.7	9.2	-0.5	8.4	+0.8
Dacca ..	7.4	9.6	+2.2	6.8	+2.8
Tippera ..	6.0	4.8	-1.2	5.5	-0.7
Midnapur ..	5.8	4.5	-1.3	2.9	+1.6
Bakarganj ..	5.2	5.6	+0.4	6.6	-1.0
Faridpur ..	4.8	7.2	+2.4	7.4	-0.2
Jessore ..	4.3	3.1	-1.2	4.4	-1.3
Noakhali ..	4.1	4.0	-0.1	5.2	-1.2
Khulna ..	4.0	3.0	-1.0	5.9	-2.9
Rangpur ..	3.3	3.7	+0.4	2.4	+1.3
Pabna ..	3.2	3.2	±0	3.0	+0.2
Howrah ..	3.0	3.3	+0.3	3.1	+0.2
Rajshahi ..	3.0	4.8	+1.8	3.5	+1.3
Nadia ..	2.9	3.8	+0.9	2.8	+1.0
Murshidabad ..	2.7	3.0	+0.3	3.2	-0.2
Chittagong ..	2.7	3.2	+0.5	2.2	+1.0
Calcutta ..	2.6	1.9	-0.7	1.8	+0.1
Burdwan ..	2.4	2.5	+0.1	1.3	+1.2
Malda ..	1.8	0.8	-1.0	4.3	-3.5
Birbhum ..	1.7	1.5	-0.2	0.6	+0.9
Bogra ..	1.6	1.5	-0.1	1.2	+0.3
Hooghly ..	1.4	1.8	+0.4	1.1	+0.7
Jalpaiguri ..	1.3	0.4	-0.9	0.1	+0.3
Dinajpur ..	1.1	1.2	+0.1	1.7	-0.5
Bankura ..	0.09	0.4	-0.5	0.4	±0
Darjeeling ..	0.2	0.1	-0.1	.002	+ .098

36. Extent of Cholera in the various districts as reported by the District Health Officers.—In Burdwan cholera raged in an epidemic form in all the thanas, except Kanksa and Faridpur and became widespread from village to village by contacts of affected houses, although many cases were imported from fairs and festivals held outside the district. Intensive anti-cholera inoculations were performed. Railway stations were also watched to detect such diseases amongst the pilgrims. 43 masonry wells, 1 ring well and 100 tube wells were sunk. In Birbhum, Nalhati, Rampurhat, Murarui, Labpur, Nanoor and Muhammad Bazar thanas suffered most. Cholera first made its appearance in some of the villages of Murarui and Nalhati thanas in the latter part of 1927 imported from Murshidabad district. In spite of vigorous measures taken, gradually the whole of the district was affected. In Bankura cholera broke out in an epidemic form in the Saltora thana elaka in villages Saltora

and Shyampur, imported from mining district. It was controlled within a short time by timely disinfection, isolation and inoculation. In Rai-pur thana elaka, it was imported from pilgrims from Ganga Sagar Mela and was easily controlled. It also broke out in the famine-stricken areas of Sonamukhi and Indus thana elaka, where the cases were more of choleraic diarrhoea due to ingestion of unwholesome food. Want of good drinking water and the ingestion of foul water of the dried up tanks and dobas and also of raw materials in the famine-stricken areas were responsible for so many deaths from cholera. The throwing of dead bodies of cholera patients and the soiled clothes in river and other water sources helped in the spread of the disease. In Midnapur the epidemic was prevalent in all the thanas, particularly in twenty of them. It was due to a serious outbreak of epidemic in Chandaneswar mela in Balasore district from which source it spread to the thanas of Contai and Tamluk subdivisions and to some thanas of the Sadar subdivision. Inoculation centres were started in each railway station during Ratha jatra festival and on river ghats during Sagar Mela. 138,532 persons were inoculated. In Hooghly cholera prevailed in all the thanas during the first part of the year. Defective water-supply appeared to be an important factor in the causation of the disease. Localities provided with deep tube-wells were comparatively free from disease. 16,970 inoculations were performed and 188 tube wells were sunk during the year. In Howrah 50 tube wells were sunk and 1 tank re-excavated.

In 24-Parganas the epidemic of cholera continued from the previous year and was brought under control in May 1928. It prevailed in almost all the thanas especially Jaynagar, Canning, Bistupur in Sadar subdivision, Hasnabad and Sandeskhali in Basirhat subdivision, and Mograhat, Mathurapur, Mondirbazar, Diamond Harbour, Kulpi and Falta in Diamond Harbour Subdivision. 79,511 inoculations were performed as against 56,010 of the previous year. In Nadia, it was prevalent in all the thanas, being continued from the latter part of the year and augmented by a deficiency of food supply during the first half of 1928. There was a general abatement of the epidemic during the second half of the year except

in Kushtia subdivision and adjoining thanas. In addition to disinfection, 74,917 anti-cholera inoculations were performed not only by the District Health staff but also by Medical Officers in charge of the District Board dispensaries within a radius of 2 miles of their dispensaries where necessary. In Murshidabad, cholera prevailed throughout the district with one single exception of Dhulian town. Cholera was worse in the Hariharpara, Nowada and Beldanga circles. It started in the first thana and spread widely along Suti river affecting both banks in this as well as Beldanga and Nowada. In other places there were more or less sporadic outbreaks. 92,135 persons were inoculated and 118 cwts. of bleaching powder, 22 gallons of Phenyle, and 1 cwt. of Potassium Permanganate used for disinfection. In Jessore 74,248 inoculations were done, besides disinfection of water sources and affected houses, distribution of medicines, leaflets and disinfectants, medical aid to the affected persons and contacts, postponement of melas, inspection of hats and bazars for rotten food stuffs, and propaganda against jute steeping in ordinary water sources. Steps were also taken to prevent pollution of river water by washing of cholera infected clothes and throwing of cholera dead bodies, through the agency of Sanitary Inspectors, temporary epidemic workers, both paid and honorary, dispensary medical officers, kala-azar doctors, anti-malarial societies and Public Health Department officers. In Khulna it has been noticed for the last few years that the disease has been of a fleeting and recurring character running from village to village. Recrudescence after a few weeks of subsidence has been the general rule, though the epidemic character was not altogether absent in some places. Thus it was seen to have affected more number of villages than in previous years. The number of villages that reported cholera deaths was 1,250 against 912 of last year and was apparently higher probably due to more cautious reporting by chaukidars. The registration of vital statistics coming under the Union Boards, has become easier for the chaukidars to record the figures. The district from its geographical situation abounds in saline water and is thus an endemic area, hence the infection instead of dying out lingers to flame up when suitable conditions are ushered in. In addition to 17 Sanitary

Inspectors in charge of 17 health circles, there were 5 District Board epidemic doctors, increased to 7 at the height of the epidemic; the services of dispensary doctors, kala-azar doctors, and health societies were fully taken advantage of whenever necessary. 57,811 inoculations were performed.

In Rajshahi, cholera broke out virulently in epidemic form within the jurisdiction of several thanas during the year. Medical officers of 32 sanitary circles started by the District Board and Sanitary Inspectors, the health assistants of 6 health circles started under the scheme of rural public health organisation as well as doctors of 12 special kala-azar groups took prompt preventive measures against the spread of the disease. Curative measures were also taken by the doctors of dispensaries. Sub-Assistant Surgeons in charge of sanitary circles as well as the Sanitary Inspectors of Health Circles were supplied with medicines and disinfectants to combat the seasonal prevalence of epidemics. The highest number of deaths (1,248) occurred in police-station Bagmara, 829 in police-station Durgapur, 656 in police-station Mohanpur, 600 in police-station Puthia, 567 in police-station Paba, 363 in police-station Tanore, 215 in police-station Charghat and 192 in police-station Godagari in Sadar Subdivision. 4,670 deaths occurred in Sadar subdivision alone out of 6,616 deaths in the district. 100,039 persons were inoculated, disinfection of tanks and wells and other available water sources, distribution of cholera pamphlets, etc., being the other measures undertaken. In Dinajpur, it broke out in severe epidemic form during the year, the largest number of deaths being in January and the last two months of the year, in which 948 out of the total 1,592 deaths occurred. 872 deaths occurred in thanas Itahar, Bochaganj, Raiganj, Kaliaganj, Parbatipur and Kushmundi. In most cases it was due to imported cases from outside, especially Gaya, Manihari, and Benares and the spread was due to the running away of the infected villagers from one village to another. The duration of the epidemic on the other hand was prolonged by the refusal of the female contacts as well as other females of the locality to be inoculated. All the thanas were affected except those of

Baliadangi, Haripur and Atwari. The largest number of deaths was in Itahar and then in Bochaganj. It was imported in Itahar by imported labour from Malda. The thana of Bochaganj got this epidemic last year from imported labour under railway construction; this year it was due to some pilgrims returning from Benares after the last eclipse. Thirty-six doctors and 7 sanitary inspectors were deputed to cope with the epidemic; 2 kala-azar doctors were also transferred to cholera duty. 26,627 inoculations were performed. Dr. Tomb's mixture was also distributed to people and so were pamphlets and leaflets; lectures were given in hats and important places. Arrangements were made to inoculate the intending pilgrims for Puri Rath-jatra and Snanjatra festivals and to keep watch at railway stations over passengers coming from Ganga Sagar fairs. In Jalpaiguri, a serious outbreak of cholera took place in Alipur Duar Thana in villages of Bhatibari, Barogari, and other villages bordering on Cooch Behar State up to Pattakhowa in the beginning of April and lasted for about a month or so. There was another short but sharp epidemic in Mal police-station. Inoculation and free treatment of indigent patients were undertaken. In Darjeeling 117 deaths occurred from cholera, all at Siliguri and Pulbazar. 372 inoculations were performed in Pulbazar and 161 at Siliguri by the Civil Surgeon's staff and 800 at Siliguri by the Public Health staff. There is no efficient sanitation at Pulbazar and large numbers of the Darjeeling hill folk visit the market there every Friday. It is not known how the disease was introduced into this place. Sixteen wells were sunk in Siliguri subdivision. In Malda the epidemic of 1927 completely stopped in January but stray cases dragged on until the onset of the monsoon. 15,594 persons were inoculated. In Bogra, 2 masonry and 22 tube wells were sunk by the District Board. In January sporadic cases were reported from Dupchanchia and Panchbibi police-stations as a continuation of the last year's epidemic, but these were quickly brought under control. The regular cholera epidemic started from the last week of August and continued practically throughout the remaining months of the year. It started in the flooded area of Dhunot, the cases being brought from Sonamukhi and Bhanudanga melas

within the Sirajganj subdivision and at Mulbari (Nandiarpara Union Board) and Chaulabari Union Board within the Sariakandi police-station on the bank of the river Brahmaputra; thence it spread to the Chandanbaisa, Aolakandi, Kamarpara, Hatsherpur and Mathurapur Union Boards within the Sariakandi police-station and practically throughout the Dhunot police-station. The whole flooded area to the eastern side of the district was affected including a number of villages within the Gabtoli, Sherpur and Bogra police-stations. The main features of the epidemic were (1) its prevalence in the eastern part of the district which was under flood as a result of which and particularly due to the extreme scarcity of boats, communication was rendered very difficult and costly and much valuable time was wasted, and (2) the fakirs were most active in disseminating the infection and actively carrying on anti-propaganda against the Health Department; as a result it was detected that the epidemic was starting in the most inaccessible localities where there could not be any scientific possibility for the epidemic to break out, e.g., it was observed to be travelling against current as predicted previously by the fakirs. Extensive inoculation, disinfection, distribution of electrolytic chlorine (found to be more efficacious both for prophylaxis and treatment of cholera than Tomb's mixture) and other medicines to all contacts for prophylactic oral administration and treatment of cholera cases were undertaken. It afterwards spread to the Shibganj police-station and was brought under control within 10 days. 35,504 inoculations were performed. In Pabna, the first and less severe outbreak in March-May mainly affected the thanas Sirajganj, Kamarkhand, Raiganj, Belkuchi, Shahzadpur and Ullapara. The second outbreak which was more severe, mainly affected the thanas Kazipur, Sirajganj, Kamarkhand, Chonhali and Shahzadpur. 57,015 inoculations were performed and disinfection of water supplies, sanitary control of melas and fairs during the prevalence of epidemic were undertaken. In Rangpur it appeared in an epidemic form in some thanas just before and after the Puja season. Its virulence was most marked in October and November when melas were being held, scattered all over the district and it is through the agencies of these melas that

cholera is mostly spread during this period of the year. Riparian tracts are much more likely to be affected by the epidemic than others, while in char lands particularly much time is lost before any steps can be taken. The mortality is therefore high in these places. All the thanas reported to be severely affected have either the Brahmaputra or the Teesta running along them. The Ulipore cholera at one time tended to become alarming being spread rapidly and widely just after the Pujas when people being free from other works, moved here and there to visit their friends and relatives. 27,085 inoculations were performed.

In Mymensingh, cholera deaths slightly decreased. The first seasonal outbreak commenced too early, i.e., in January 1928 and lasted up to June 1928. The epidemic again broke out in the latter part of September in Syamganj and its neighbouring villages—the junction of 3 thanas, viz., Ishwarganj, Fulpur and Purbadhalla, but it was checked within a short time by the deputation of public health doctors, epidemic doctors and sanitary inspectors. There were outbreaks of cholera in other thanas also in epidemic form but were put down by the sanitary staff. 102,748 inoculations were performed.

In Bakarganj the epidemic was most virulent; the most badly affected circles being Baranadi, Bhola, Gournadi, Barisal, Mehdiganj and Matbaria. Pollution of water of tanks and of water current by careers, etc., and by washing of soiled clothes of cholera patients were attributed to be the causes of the disease; contact infection or infection by flies also played some part. The measures taken were treatment of 5,093 cases and disinfection of 3,457 tanks and 3,284 houses and inoculation of 105,047 persons.

In Chittagong, cholera broke out in an epidemic form in December 1927 in police-stations Satkania and Raozan, Anwara, Chakaria and Ranguria and spread to Boalkhali, Jalda, Pateya and Hathazari in January 1928. The epidemic continued and assumed a virulent type in April 1928, specially in Cox's Bazar subdivision. It began to subside in July and practically disappeared in September. 59,168 persons were inoculated and a number of sources of water-supply disinfected. Infected clothings were treated with

Izol. Latrines, vomit and stools of cholera patients were disinfected. Chlorogen was used for disinfecting household drinking water-supplies. Magic lantern lectures were given on food and drink. Some patients were treated by epidemic doctors during the early stage of disease. In Noakhali the incidence of cholera was rather very high. Cholera prevailed during the first half of the year in epidemic form in Noakhali town, Lakhipur and Sandwip thanas. In spite of extensive anti-cholera inoculation and disinfection the disease could not be properly controlled owing to the following reasons: (1) It is not compulsorily notifiable, causing thereby considerable delay in getting prompt information; (2) legal power is wanting to compel people to submit to inoculation; (3) want of female inoculators to push on inoculation amongst purdanashin women; (4) unsatisfactory arrangement of conservancy and water-supply in the markets; (5) the presence of a large number of cholera carriers in the endemic villages mainly in the Sadar subdivision. In Tippera, thanas Laksham and Chandpur were most affected. 96,405 inoculations were performed.

37. Cholera in towns and rural areas.—7,288 deaths from cholera occurred in urban and 128,957 in rural areas with a death-rate of 2·3 and 3·0 per mille respectively against 7,212 and 111,165 deaths with rates of 2·3 and 2·6 respectively in 1927. While there was not much difference in the town rate in the two years, the rural areas showed an excess of 15·4 per cent. in 1928 in its cholera rate. No case of cholera was reported from 4 towns. The highest death-rate 9·8 per mille was returned from Netrakona; 2 other towns registered rates between 8 and 9 per mille, 6 between 6 and 7 per mille, 5 between 5 and 6 and the rest below 5·0 per mille.

38. Preventive measures.—The various anti-cholera measures taken during the year may be summarised as follows:—

(a) *Inoculation*—2,304,457 c.c.s of anti-cholera vaccine were issued during the year against 1,299,630 c.c.s in the previous year. 1,941,023 inoculations were reported to have been performed in the province compared with 781,872

inoculations in 1927 and 57,395 in 1926. These figures speak for themselves.

Districts.	Quantity of anti-cholera vaccine supplied from January to December 1928.	Number of inoculations reported during 1928.	Number of deaths from cholera during 1928.
Burdwan	81,240	109,463	3,458
Birbhum	94,000	69,333	1,994
Bankura	3,150	3,417	549
Midnapur	222,720	152,641	6,202
Hooghly	46,800	22,457	2,509
Howrah	54,500	64,334	4,473
24-Parganas ..	84,135	118,620	12,597
Nadia	70,460	85,525	5,233
Murshidabad ..	114,680	71,180	4,103
Jessore	87,640	74,248	4,261
Khulna	51,540	56,098	4,133
Rajshahl	73,000	102,593	6,616
Dinajpur	60,670	38,225	1,591
Jalpaiguri	35,488	21,686	521
Darjeeling	2,500	1,333	117
Rangpur	57,828	40,081	5,000
Bogra	49,760	33,162	2,044
Pabna	71,260	57,247	4,358
Malda	58,311	16,022	1,074
Dacca	195,770	144,275	13,140
Mymensingh ..	200,170	112,266	15,870
Faridpur	99,720	97,183	9,777
Bakarganj	89,835	108,231	7,692
Chittagong	79,080	62,904	4,379
Chittagong Hill Tracts ..	5,480	5,602	..
Tippera	128,640	102,725	6,498
Noakhali	155,450	157,473	5,472
Railways and Steamer Companies ..	10,160	No report.	..
Puri Pilgrims ..	1,100	1,031	..
Haj Pilgrims ..	450	446	..
Ganga Sagar Mela ..	10,000	9,439	..
Miscellaneous ..	8,920	1,783	..
Total	2,304,457	1,941,023	136,245

(b) *Disinfection of Water-supplies.*—55,685 wells and 36,001 tanks were disinfected in addition to a number of river ghats, infected houses and patients' clothes, by the local sanitary authorities and 3,244 wells, 2,521 houses and 21 latrines by the staff of the Sub-Assistant Surgeons and Sanitary Inspectors deputed by the Public Health Department to the various districts for anti-cholera work.

(c) The Bengal Public Health Department assisted the local authorities with the services of 18 medical officers from the field staff augmented by a temporary staff of 5 sub-assistant surgeons and 100 Sanitary Inspectors.

(d) Propaganda work was carried on by means of lectures and magic lantern

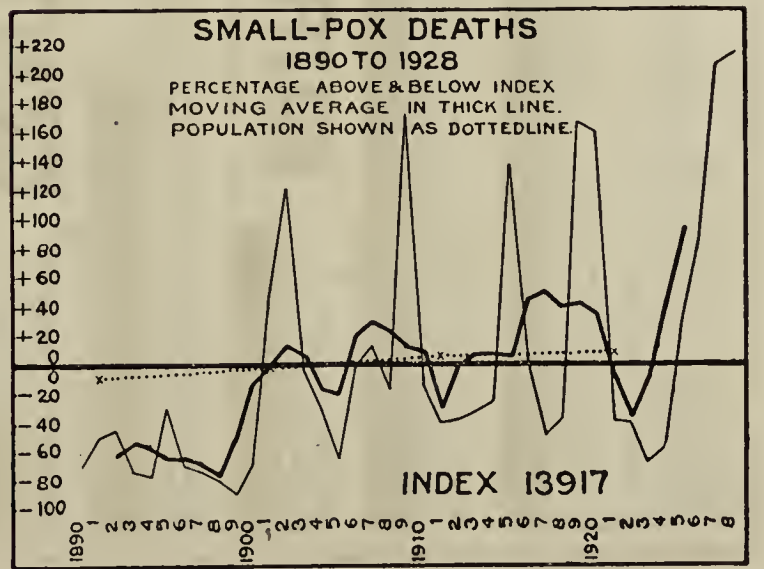
demonstrations given as in the previous years by the Government Publicity staff and the local sanitary officers.

(e) Special measures were taken to inoculate Puri Rathjatra and the Ganga-sagar mela pilgrims.

Smallpox.

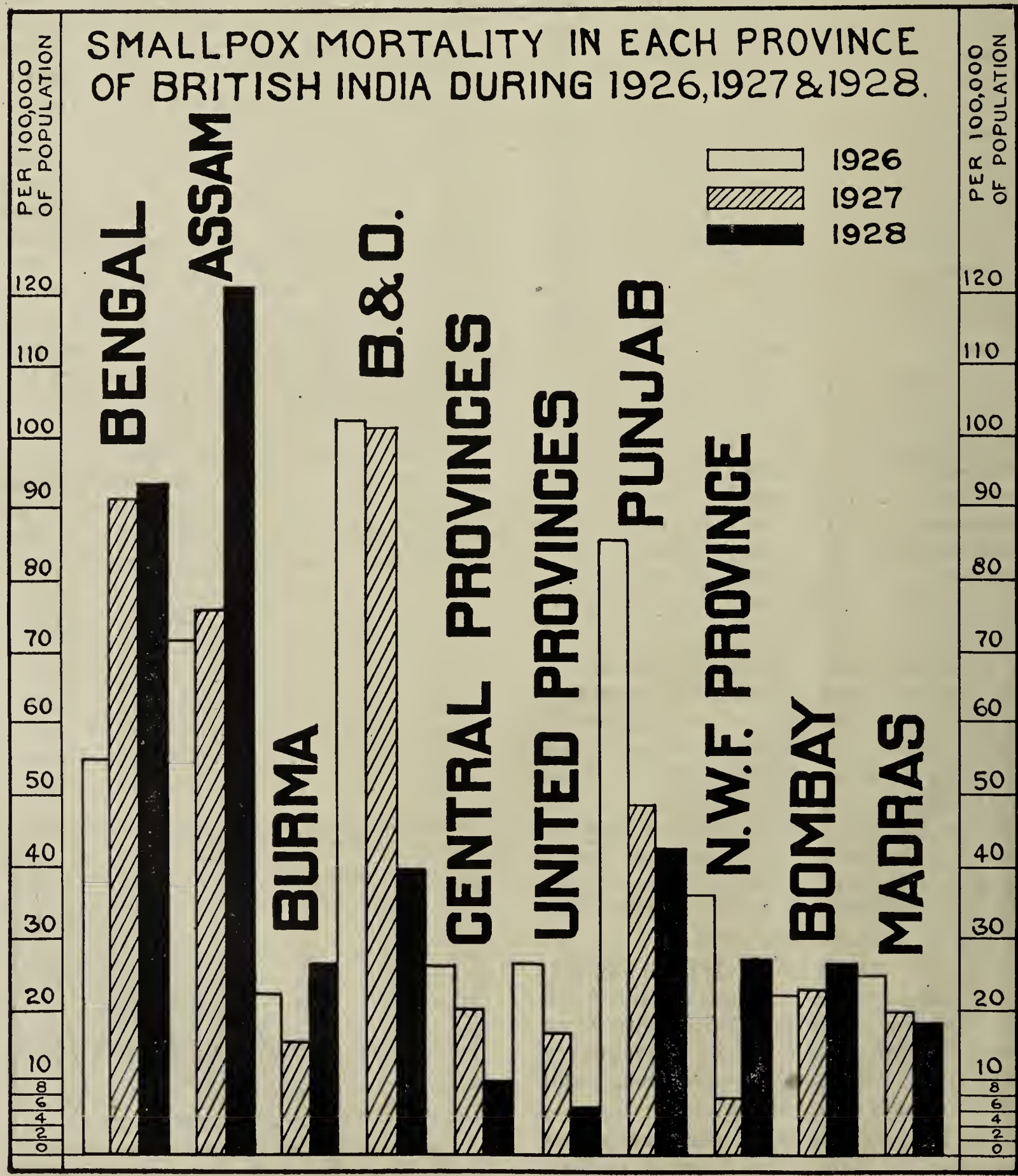
39. **General Prevalence.**—The quinquennial outbreak of smallpox which started towards the close of 1924 continued throughout 1928. 43,558 deaths were reported to have occurred during the year compared with 42,514 in 1927 showing an increase of 1,044. As shown in the following table, the slight increase this year as compared with what it has been in the previous three years, portends a gradual decline in the smallpox mortality in the near future. Of course the danger of the province being overwhelmed suddenly by the apprehended pandemic is not yet over and it is well that the local bodies should still persist in their well-organised schemes of mass revaccination which they have started so recently. The death rate was higher than the previous year's by 2·4 per cent. and a little more than the decennial mean. Smallpox was responsible for 3·7 per cent. of the total provincial mortality as against 3·6 per cent. in the previous year. From the graph on the next page it appears that in 1928 besides Bengal, smallpox rose in 4 other provinces as well, while in the remaining five it was lower than that in the previous year.

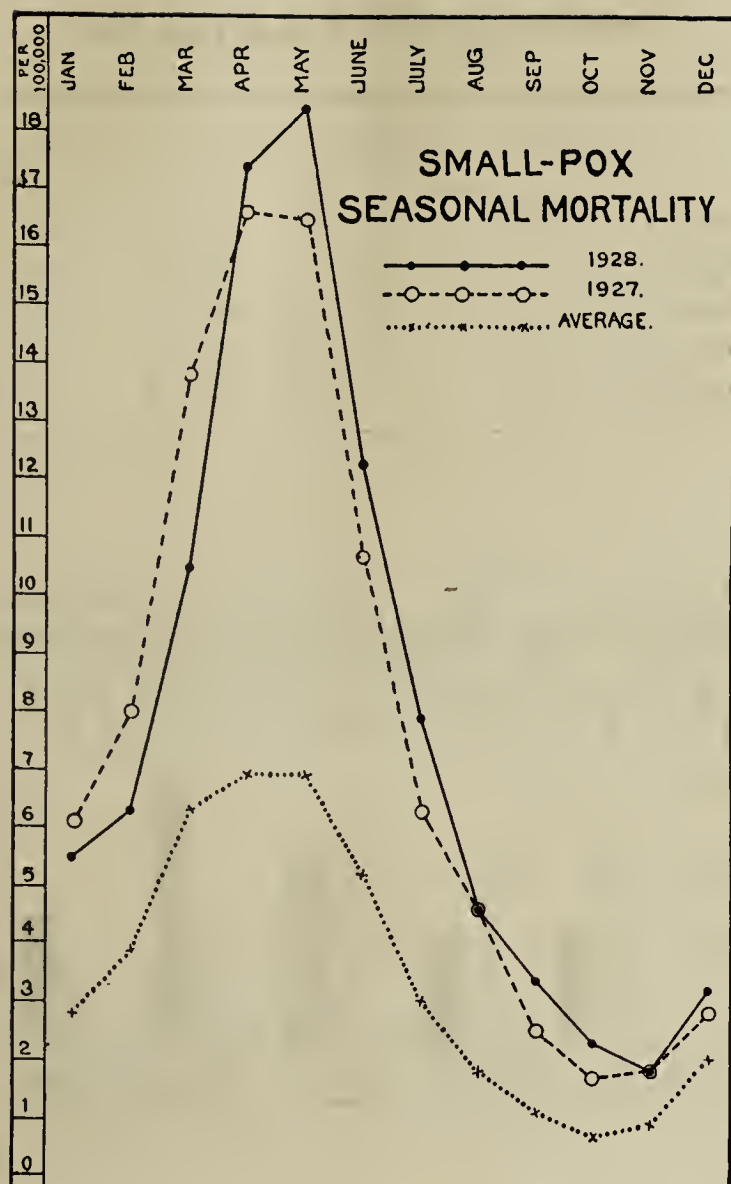
Years.	Number of deaths.	Increase over the previous year.
1924	5,567	1,331
1925	17,436	11,869
1926	25,548	8,112
1927	42,514	16,966
1928	43,558	1,044



40. **Seasonal incidence.**—In 1928 as in other years, the mortality was highest in the period between March to June when it began to diminish gradually reaching its minimum in November. It was higher than the decennial average in every month. It exceeded the previous year's rate in every month except in January to March when it was less and August and November when it showed no change.

Seasonal Smallpox Mortality per 100,000 of population.				
		Average, 1918-27.	1927.	1928.
January	..	2.8	6.1	5.5
February	..	3.9	8.0	6.3
March	..	6.3	13.8	10.5
April	..	6.9	16.6	17.4
May	..	6.9	16.5	18.4
June	..	5.2	10.7	12.3
July	..	3.0	6.3	7.9
August	..	1.8	4.6	4.6
September	..	1.1	2.5	3.4
October	..	.7	1.7	2.3
November	..	.9	1.8	1.8
December	..	2.0	2.8	3.2
Total		41.5	91.4	93.6





41. **Smallpox by divisions.**—(a) *Crude death rates.*—Dacca and Chittagong which returned the lowest mortality rate from smallpox during the previous year and the past decennium showed the highest in 1928. In the remaining 3 Divisions, while the death rate was reduced as compared with the previous year it still maintained its ascent in comparison with the preceding decennium.

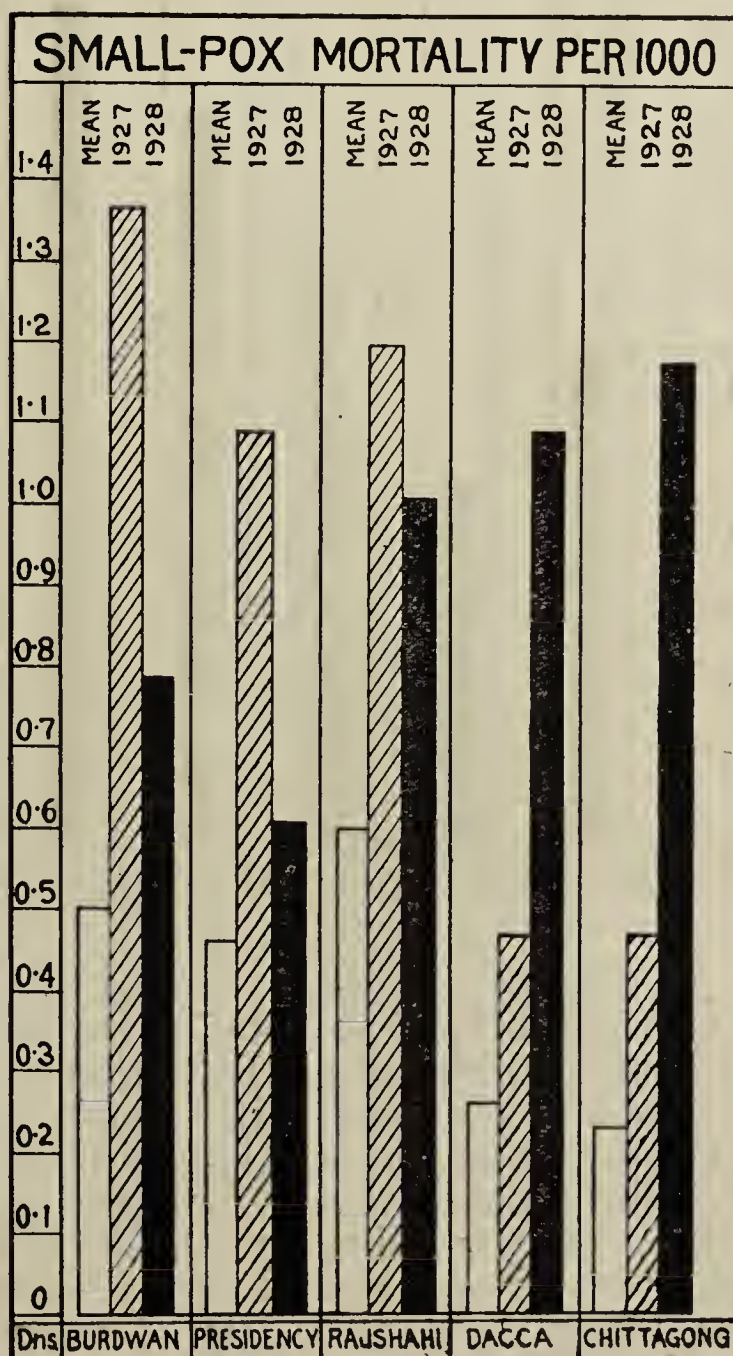
Smallpox Mortality per 1,000 by Divisions.

Divisions.	Mean. 1918-27.	1927.	1928.
Burdwan .. ..	.50	1.37	.79
Presidency .. ..	.46	1.09	.61
Rajshahi .. ..	.60	1.20	1.01
Dacca .. ..	.26	.47	1.09
Chittagong .. ..	.23	.47	1.18

As is well known, vaccination especially revaccination is the only controlling factor in smallpox outbreaks; it is also a fact that the more virulent an outbreak the more intensive the vaccination campaign carried on against it. Taking 1924 as a normal year, the increase in the smallpox mortality was very rapid in 1925 and

subsequent years in Burdwan and Presidency Divisions but comparatively very slow in the other three. As a consequence intensive anti-smallpox campaigns were started in the previous two Divisions much earlier than in the others. In 1926, Rajshahi put up the speed and the local bodies were thus stimulated to take urgent action then. It was only in 1927 that smallpox appeared to grow virulent in the Dacca and Chittagong divisions. The result was that the career of smallpox was cut short in Burdwan and Presidency and controlled in Rajshahi in 1928 but the measures had not had sufficient time yet to check the onward progress of the epidemic in Dacca and Chittagong.

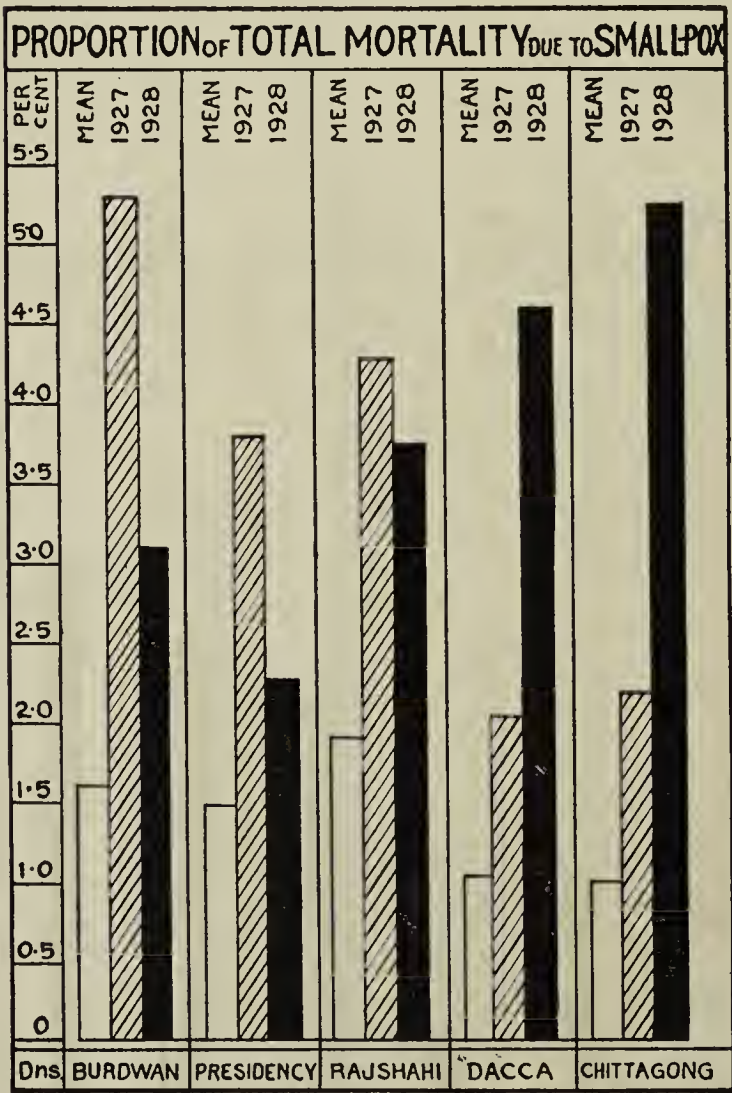
Divisions.	Death rates from smallpox.				
	1924.	1925.	1926.	1927.	1928.
Burdwan ..	.10	.80	1.00	1.37	.79
Presidency ..	.15	.74	.73	1.09	.61
Rajshahi ..	.11	.15	.70	1.20	1.01
Dacca ..	.09	.12	.16	.47	1.09
Chittagong ..	.13	.15	.20	.47	1.18



(b) *Proportion to total mortality.*—Here again it will be seen from the following table that it was the Eastern Bengal that suffered most from smallpox in 1928, 4·60 and 5·26 per cent. of the total deaths in Dacca and Chittagong Divisions respectively being due to this disease. Comparatively speaking, smallpox was responsible for 1 in 19 deaths occurring in Chittagong, 1 in 22 in Dacca, 1 in 28 in Rajshahi, 1 in 32 in Burdwan and 1 in 44 in Presidency Divisions.

Proportion to total Mortality, per cent.

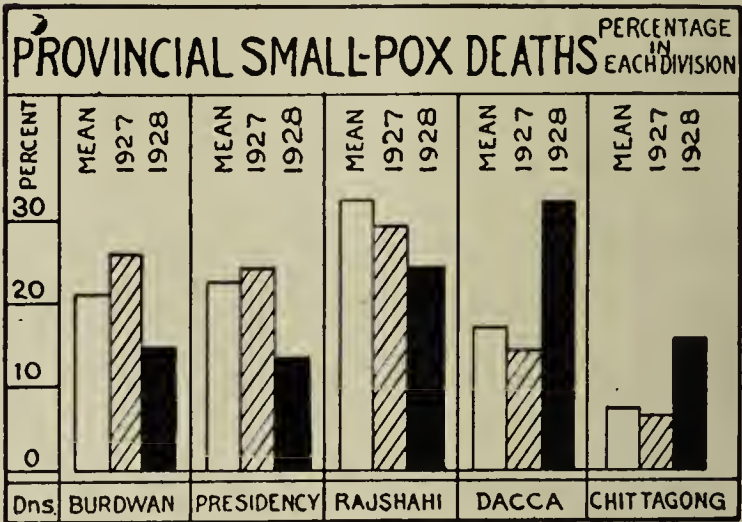
Divisions.	Mean, 1918-27.	1927.	1928.
Burdwan	1·60	5·30	3·11
Presidency	1·48	3·79	2·28
Rajshahi	1·91	4·30	3·55
Dacca	1·03	2·03	4·60
Chittagong	·99	2·18	5·26



(c) *Divisions as smallpox centres.*—About one-third of the total deaths due to smallpox occurred in Dacca Division and about one-fourth in Rajshahi. This proportion increased in both Dacca and Chittagong Divisions, especially the former but was reduced in the other 3 Divisions when compared with either the decennial mean or the previous year's percentage.

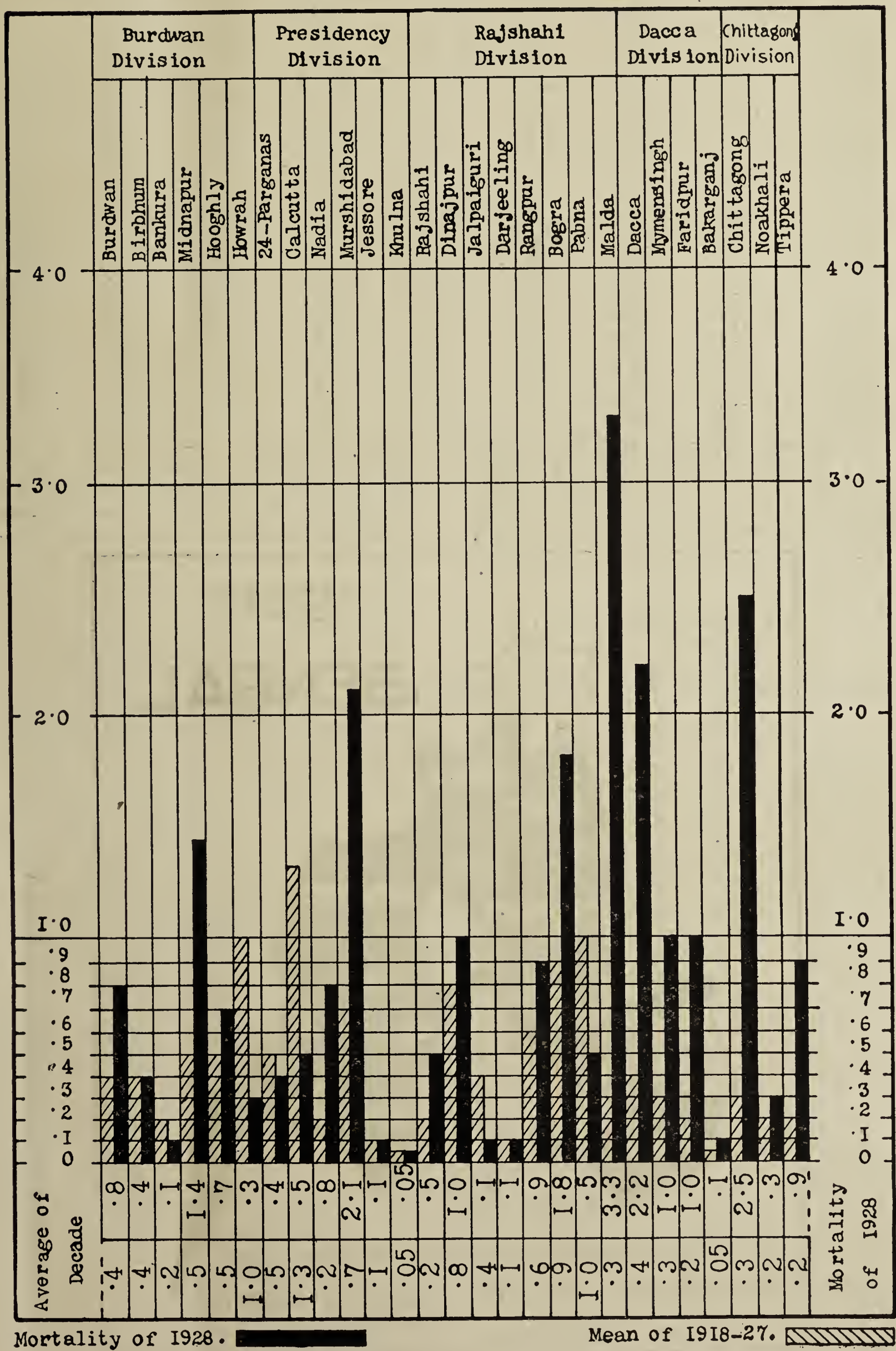
Provincial Smallpox Mortality per cent.

Divisions.	Mean, 1918-27.	1927.	1928.
Burdwan	21·1	25·9	14·6
Presidency	22·4	24·3	13·3
Rajshahi	32·3	29·2	24·1
Dacca	17·1	14·1	32·1
Chittagong	7·1	6·4	15·8



42. **Smallpox by districts.**—(a) *Crude death rates.*—Nine districts returned rates higher than the provincial death rate from smallpox—Dacca, Faridpur and Mymensingh in Dacca Division, Chittagong in Chittagong Division (Tippera nearly approaching it), Malda, Bogra and Dinajpur in Rajshahi (Rangpur approximating), Murshidabad in Presidency (Nadia not far behind) and Midnapur in Burdwan Division. Thus 3 out of 4 districts in Dacca, 2 out of 3 in Chittagong, 4 out of 8 in Rajshahi, 2 out of 5 in Presidency and 1 out of 6 in Burdwan Divisions were badly affected. Malda which had a death rate of ·34 per mille during the previous decennium and ·66 in the previous year rose to 3·27 in 1928. Similarly Chittagong and Dacca which registered ·27 and ·40 during the previous decade and ·36 and ·67 in 1927 returned rates of 2·50 and 2·22 respectively in 1928. Calcutta and Pabna which recorded 1·31 and 1·01 respectively as their decennial rates showed only ·52 and ·46 deaths per mille in 1928. Besides some others, all the districts that had death rates of ·80 per mille and above in 1927 had their mortality reduced in 1928. Thus 17 out of the 27 districts improved during the year under review so far as smallpox was concerned.

Graph showing the Relative Intensity of Small-pox Mortality in each district of Bengal Presidency during the year 1928 and the Average of Decade 1918—27.

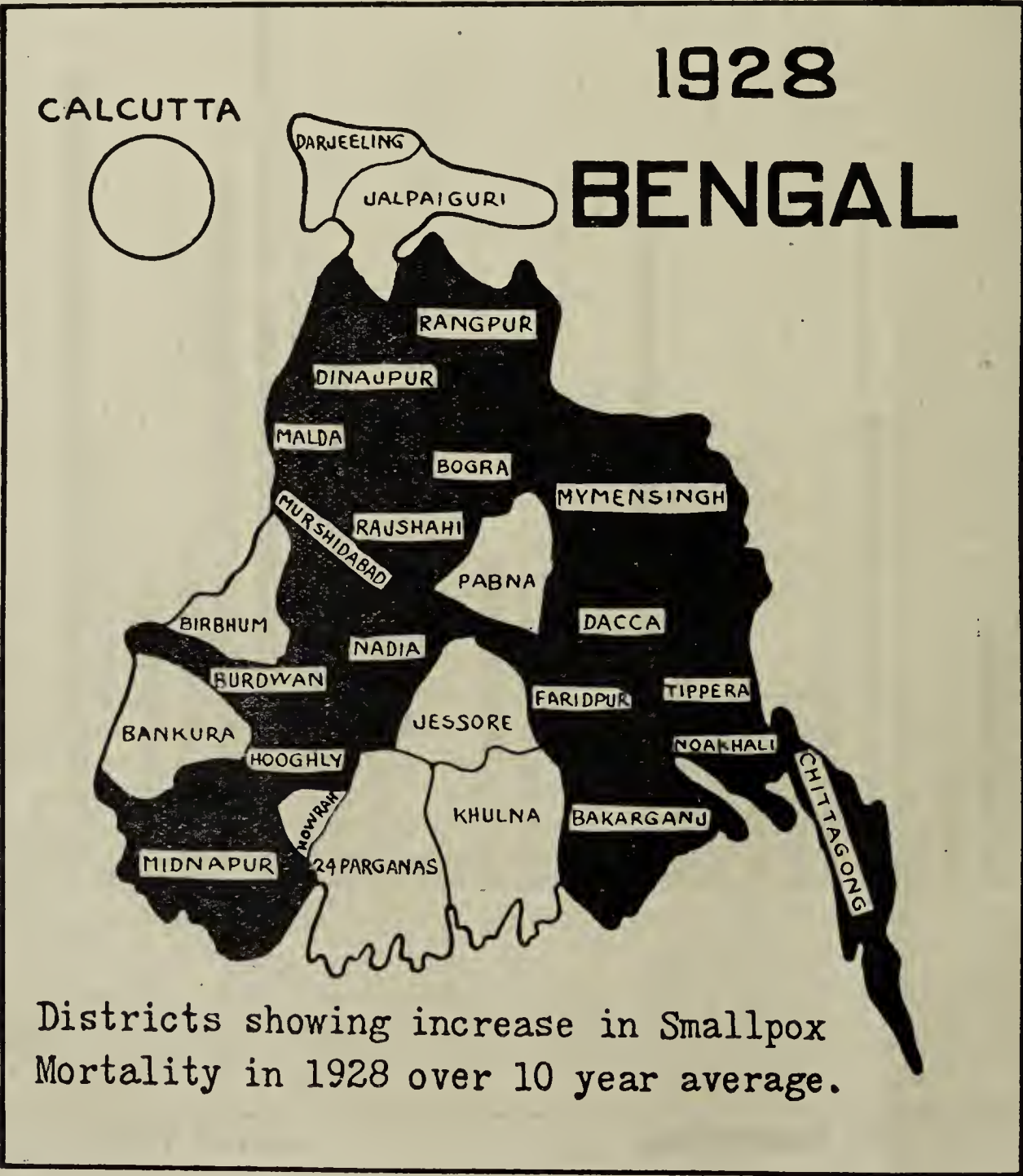


Smallpox death rates per mille.

Districts.	Average of decade, 1918-27,	1928.	Increase+ or decrease—.	Percentage of increase+ or decrease—.	1927.	Increase+ or decrease—.	Percentage of increase+ or decrease—.
Calcutta ..	1.31	.52	— .79	— 60.3	2.65	—2.13	— 80.4
Pabna ..	1.01	.46	— .55	— 54.5	3.45	—2.99	— 86.7
Howrah ..	.98	.35	— .63	— 64.3	2.15	—1.80	— 83.7
Bogra ..	.90	1.78	+ .88	+ 97.7	2.50	— .72	— 28.8
Dinajpur ..	.79	.96	+ .17	+ 21.5	.78	+ .18	+ 23.0
Murshidabad ..	.71	2.10	+1.39	+195.7	2.72	— .62	— 22.8
Rangpur ..	.58	.90	+ .32	+ 55.2	1.05	— .15	— 14.3
24-Parganas ..	.53	.43	— .10	— 18.9	1.24	— .81	— 65.3
Midnapur ..	.50	1.38	+ .88	+175.9	1.83	— .45	— 24.6
Hooghly ..	.50	.70	+ .20	+ 40.0	.95	— .25	— 26.3
Burdwan ..	.45	.75	+ .30	+ 66.6	.84	— .09	— 10.7
Birbhum ..	.44	.39	— .05	— 11.4	1.74	—1.35	— 77.6
Jalpaiguri ..	.44	.08	— .36	— 81.8	.05	+ .03	+ 60.0
Dacca ..	.40	2.22	+1.82	+455.0	.67	+1.55	+231.3
Malda ..	.34	3.27	+2.93	+861.6	.66	+2.61	+395.4
Mymensingh ..	.31	.96	+ .65	+209.6	.58	+ .38	+ 65.5
Chittagong ..	.27	2.50	+2.23	+825.8	.36	+2.14	+594.3
Nadia ..	.25	.82	+ .57	+228.0	.28	+ .54	+192.8
Tippera ..	.23	.90	+ .67	+291.3	.45	+ .45	+100.0
Noakhali ..	.20	.26	+ .06	+ 30.0	.62	— .36	— 58.1
Bankura ..	.19	.15	— .04	— 21.1	.28	— .13	— 46.5
Rajshahi ..	.19	.52	+ .33	+173.7	.20	+ .32	+160.0
Faridpur ..	.19	.98	+ .79	+415.8	.36	+ .62	+172.2
Jessore ..	.15	.14	— .01	— 6.7	.24	— .10	— 41.7
Darjeeling ..	.14	.06	— .08	— 57.2	.07	— .01	— 14.3
Khulna ..	.05	.05	±0	± 0	.12	— .07	— 58.3
Bakarganj ..	.05	.06	+ .01	+ 20.0	.10	— .04	— 40.0

(b) *The Relative importance of smallpox as a cause of death.*—Malda where about 1 in 8 deaths occurred from that disease appears to have suffered from

the most virulent outbreak of smallpox in 1928. Dacca with its 1 in 11, Chittagong with 1 in 12 and Bogra with 1 in 13 deaths due to smallpox



also fared very badly. Darjeeling, Bakarganj and Jalpaiguri suffered very slightly by comparison. This proportion was reduced only in 7 districts compared with the previous decennium. As against previous year 16 out of 27 districts showed improvement, some very marked, e.g., Pabna.

Smallpox as a percentage of the Total Mortality.

Districts.	Average, 1918-27.	1928.	Increase + or decrease —	1927.	Increase + or decrease —
Calcutta ..	4.28	1.63	— 2.65	7.77	— 6.14
Pabna ..	3.48	2.08	— 1.40	13.58	— 11.50
Howrah ..	3.46	1.34	— 2.12	7.40	— 6.06
Bogra ..	3.36	8.00	+ 4.64	12.18	— 4.18
Dinajpur ..	2.23	2.79	+ .56	2.29	+ .50
24-Parganas ..	1.99	1.91	— .08	5.14	— 3.23
Rangpur ..	1.99	3.22	+ 1.23	4.10	— .88
Murshidabad ..	1.89	7.15	+ 5.26	8.06	— .91
Midnapur ..	1.70	5.75	+ 4.05	7.59	— 1.84
Dacca ..	1.65	9.09	+ 7.44	3.43	+ 5.66
Hooghly ..	1.63	2.71	+ 1.08	3.89	— 1.18
Jalpaiguri ..	1.38	.30	— 1.08	.18	+ .12
Mymensingh ..	1.33	4.49	+ 3.16	2.78	+ 1.71
Burdwan ..	1.32	2.90	+ 1.58	3.20	— .30
Tippera ..	1.19	5.31	+ 4.12	2.67	+ 2.64
Birbhum ..	1.17	1.32	+ .15	5.99	— 4.67
Malda ..	1.15	11.87	+ 10.72	2.27	+ 9.60
Chittagong ..	.97	8.53	+ 7.56	1.44	+ 7.09
Noakhali ..	.74	1.03	+ .29	2.37	— 1.34
Faridpur ..	.71	3.67	+ 2.96	1.32	+ 2.35
Nadia ..	.68	2.80	+ 2.12	1.00	+ 1.80
Bankura ..	.59	.64	+ .05	1.12	— .48
Rajshahi ..	.53	1.56	+ 1.03	.63	+ .93
Jessore ..	.51	.48	— .03	.81	— .33
Darjeeling ..	.37	.18	— .19	.26	— .08
Bakarganj ..	.19	.23	+ .04	.36	— .13
Khulna ..	.18	2.08	+ 1.90	.42	+ 1.66

(c) Districts as smallpox centres.—

It will be observed from the following table that a little over one-third of the total provincial mortality from smallpox occurred in Dacca, Mymensingh and Chittagong districts. Fifteen districts showed an improvement in this respect and 8 a retrogression when compared with the previous decennium and 1927. Dinajpur and Jalpaiguri showed a reduction when compared with the decennial average but an excess over the previous year's death rate, while in Midnapur and Murshidabad the position was reversed.

Percentages of Provincial Smallpox Mortality in each district.

Districts.	Average, 1918-27.	1928.	Increase + or decrease —	1927.	Increase + or decrease —
Mymensingh ..	7.8	10.7	+ 2.9	6.7	+ 4.0
Rangpur ..	7.5	5.2	— 2.3	6.2	— 1.0
Calcutta ..	7.3	1.3	— 6.0	6.7	— 5.4
Pabna ..	7.3	1.5	— 5.8	11.3	— 9.8
Dinajpur ..	7.0	3.8	— 3.2	3.1	+ 0.7
Midnapur ..	6.9	8.4	+ 1.5	11.5	— 3.1
24-Parganas ..	6.8	2.4	— 4.4	7.2	— 4.8
Dacca ..	6.4	15.9	+ 9.5	4.9	+ 11.0
Howrah ..	5.1	0.8	— 4.3	5.0	— 4.2
Bogra ..	4.9	4.3	— 0.6	6.2	— 1.9
Murshidabad ..	4.7	6.1	+ 1.4	8.1	— 2.0
Burdwan ..	3.3	2.5	— 0.8	2.8	— 0.3
Tippera ..	3.3	5.7	+ 2.4	2.9	+ 2.8
Hooghly ..	2.8	1.7	— 1.1	2.4	— 0.7
Chittagong ..	2.2	9.3	+ 7.1	1.4	+ 7.9
Faridpur ..	2.2	5.1	+ 2.9	1.9	+ 3.2
Jalpaiguri ..	2.1	0.2	— 1.9	0.1	+ 0.1
Nadia ..	1.9	2.8	+ 0.9	1.0	+ 1.8
Birbhum ..	1.9	0.8	— 1.1	3.5	— 2.7
Malda ..	1.8	7.4	+ 5.6	1.5	+ 5.9
Rajshahi ..	1.5	1.8	+ 0.3	0.7	+ 1.1
Noakhali ..	1.5	0.9	— 0.6	2.1	— 1.2
Jessore ..	1.4	0.6	— 0.8	1.0	— 0.4
Bankura ..	1.0	0.3	— 0.7	0.7	— 0.4
Bakarganj ..	0.7	0.3	— 0.4	0.6	— 0.3
Khulna ..	0.4	0.2	— 0.2	0.4	— 0.2
Darjeeling ..	0.2	0.04	— .16	0.05	— 0.01

43. Extent of Smallpox in districts as reported by the District Health Officers.—In Birbhum, Murarai, Dubrajpur, Illambazar, Sainthia and Nalhati thanas suffered most. Free vaccination and revaccination were carried on. In Midnapur it was particularly prevalent in Debra, Danton, Narayanagarh, Ghatal, Panskura and Bhagwanpur thanas, most prevalent in April.

In Nadia it prevailed in police-stations Krishnagar and Kumarkhali, in both of which thanas the epidemic was continued from the latter part of the preceding year. The said two thanas recorded 57 per cent. of this year's district smallpox mortality. It was most prevalent during the first half of the year. Preventive measures were hampered owing to delayed notification and absence of compulsory re-vaccination; vaccination and re-vaccination were performed free and a lady vaccinator worked for some time. Treatment of smallpox cases with xylol was introduced this year with satisfactory results. Smallpox occurred in mild form in all the other thanas except Chakda which was absolutely free from the disease. In Murshidabad deaths were reported from all registering circles and in all months of the year. Vaccination under gang system was carried out throughout the year except during the rains. 150 lbs. of smallpox oil were also distributed free.

In Rajshahi the disease appeared seriously in an epidemic form in police-stations Godagari, Manda, Niamatpur and Mahadebpur. There was a large number of deaths in the first three areas owing to the unwillingness of the people in the beginning to get themselves properly vaccinated and it was only later on when revaccination was enforced that the disease subsided. In other thanas the cases were sometimes sporadic and sometimes took an epidemic form. In Dinajpur, Parbatipur, Khanshama and Chirirbandar thanas suffered most, the former registering 789 and the other two, 166 and 110 deaths respectively. In Darjeeling 16 deaths occurred from smallpox, 6 in Darjeeling town and 10 in rural areas. Most of these cases were imported from Nepal. In Malda increasing incidence of smallpox of 1927 assumed the type of very bad epidemic and affected practically the southern half of the district. This continued till the onset of monsoon in

July after which sporadic cases continued throughout the year. Government contributed Rs. 6,000. Thirty-five temporary hands were employed over and above the usual staff of 30 vaccinators from March. Systematic, thorough and intensive vaccination and re-vaccination were taken up. 447,000 vaccinations were performed in 1928 against an average of 60,000 done in normal years. 5,471 infected houses were disinfected with formalin. In Bogra smallpox continued from last year and prevailed up to July 1928. It started from Rameswarpur Union Board under Gabtoli police-station and Mathurapur and Gopalnagar Union Boards under Dhunot police-station where it was smouldering undetected and unreported from last year and where the intensity of the epidemic was highest. It spread throughout the Gabtoli, Dhunot, Sariakandi and Bogra and Shibganj police-stations. It also cropped up within the Panchbibhi police-station as a continuation of the last year's epidemic. A large number of smallpox patients were treated with intramuscular injections of milk with Iodine, and Xylol was also given a trial in a few cases. The result of the treatment was most satisfactory. In Pabna a mild epidemic occurred in April and May and mainly affected the thanas Pabna, Chatmahar, Faridpur, Santhia, Sirajganj and Kazipur. Vaccination and re-vaccination of females was carried on by female vaccinators. Distribution of the medicated oil and propaganda work and other measures were taken. In Badarganj thana the epidemic first broke out amongst the upcountry labourers mostly working in the Railway and during the season on agricultural field work, in the interior of the villages. It then spread through this agency among the rural inhabitants. Being adjacent to that part of Dinajpur district which was also severely affected with smallpox and having close communication with the railway establishment of Parbatipur, it was with great difficulty that the epidemic was brought to a termination. Some fakirs notorious for spreading smallpox were also detected and prosecuted and were found guilty.

In Mymensingh, an epidemic of smallpox occurred in March to June in police-stations Gaffargaon, Kalurakonda, Durgapur, and Halnaghat; sporadic cases of smallpox occurred also in most

of the other thana areas. In Bakarganj 147 deaths were reported under this head but the actual number of cases were 900 with 164 deaths. All the affected houses were disinfected and all contacts were vaccinated. In all 1,398 houses, 93 tanks were disinfected and 12,232 contact persons were vaccinated. Smallpox epidemic was prevalent particularly at Charfason, Muladi, Hijla and Babuganj thanas.

In Chittagong smallpox broke out in epidemic form in January 1925 in police-stations Satkania and Patiya. The epidemic continued and spreaded to thanas Boalkhali, Anwara, Ramoo and Chakaria. The highest mortality occurred in April. It began to subside in June. 84,943 primary and 90,861 re-vaccinations were performed. About 40 vaccinators worked in the district almost throughout the whole year. Infected houses and clothings were disinfected. In Noakhali the disease was prevalent in scattered form, and was imported from Calcutta, Chittagong, Rangoon and also from Comilla Hill Tracts. In Tippera all the thanas were affected especially Brahmanbaria and Matlab. The disease prevailed almost throughout the year.

44. Smallpox in towns and rural areas.—1,492 deaths from smallpox occurred in urban and 42,066 in rural areas with death rates of .48 and .97 per mille in 1928 against 4,519, 37,995, 1.45 and .87 respectively in 1927. The total number of deaths thus showed a decrease of 67 per cent. in towns though it was increased by 10.8 per cent. in rural areas. Calcutta which in the previous year had registered 2,860 deaths and a death rate of 2.65 per mille, in 1928 had only 558 deaths and a death rate of .52 to its credit showing a decrease of 80.5 per cent. The urban rate which exceeded the rural by about 66 per cent. in the previous year was just half of the latter during the year under review.

Smallpox in towns and rural areas.

		1927.	1928.
Total number of deaths—			
Province	.. ..	42,514	43,558
Towns	.. ..	4,519	1,492
Calcutta	.. ..	2,860	558
Rural areas	.. ..	37,995	42,066
Death rate per mille of population—			
Province	.. ..	.91	.93
Towns	.. ..	1.45	.48
Calcutta	.. ..	2.65	.52
Rural areas	.. ..	.87	.97

Forty-three out of 117 towns did not report any death from smallpox as against 20 in the previous year. Dhulian and Murshidabad both in Murshidabad district returned death rates of 4·4 and 4·2 per mille. Jiaganj-Azimganj again in the same district reported a rate of 3·2 per mille, 7 others registered rates between 2 and 3 per mille, 8 between 1 and 2 per mille and the rest below 1 per mille.

The following table shows the distribution of smallpox deaths in towns by divisions. Three-fourths of the towns appear to have been infected with smallpox in Burdwan and Rajshahi divisions, two-thirds in Dacca and Chittagong divisions and about half in Presidency. The average number of deaths per town was highest in Chittagong division and lowest in Rajshahi.

Divisions.	Total number of towns.	Number of towns infected.	Number of deaths.	Percentage of deaths.	Average deaths per town.
Burdwan ..	29	21	259	27·7	12·3
Presidency ..	47	24*	381	40·8	15·9
Rajshahi ..	15	11	103	11·0	9·4
Dacca ..	20	13	126	13·5	9·7
Chittagong ..	6	4	65	7·0	16·2
Total ..	117	73	934	100·0	12·8

*Excluding Calcutta.

45. **Deaths from smallpox among infants and children.**—4,312 infants and 10,970 children between one and ten years of age died of smallpox compared with 2,932 infants and 8,020 children in the previous year. This constituted 9·9 and 25·2 per cent. of the total mortality due to smallpox at all ages compared with 6·9 and 18·9 respectively in 1927. This increase was evidently due to a laxity in the enforcement of provisions of the Vaccination Act under which every child should be vaccinated within 6 months of its birth. Unfortunately in this province primary vaccination is unduly delayed even up to a ripe age, with results frightfully disastrous as shown by the above figures, smallpox being a fatal disease at these age periods. Prosecutions of defaulters as has been mentioned in another place in this report are only occasionally initiated and even when they are, the delay of the law and the lenient view taken by the authorities of the offence, render abortive the steps so necessary to be taken with promptitude, especially during epidemic times. The divisional

distribution of such deaths are shown below:—

Divisions.	Number of small-pox deaths.		Total number of smallpox deaths at all ages.
	Under 1 year.	Between 1 and 10 years.	
Burdwan ..	357	1,118	6,356
Presidency (including Calcutta) ..	898	1,788	5,800
Rajshahi ..	615	1,670	10,517
Dacca ..	1,627	4,119	13,985
Chittagong ..	815	2,275	6,900
Total ..	4,312	10 970	43,558

The statement below shows that no death from smallpox among these communities was reported from Khulna. Darjeeling and Bakarganj. Eight districts which returned no death from smallpox either among infants or children between 1 to 10 years of age or in both in the previous year, joined the list in 1928. Of the remaining, 9 districts showed an excess over the previous year in the infant death rate from smallpox and 7 in the children's rate. This increase is alarming and demands strict and punctual enforcement of the provisions of the compulsory Vaccination Act.

Statement showing percentages of Smallpox deaths among infants and children between 1 and 10 years of age to total deaths from Smallpox at all ages.

Districts.	Infants.		Children between 1 and 10 years of age.	
	1927.	1928.	1927.	1928.
Burdwan ..	8·0	8·6	16·0	14·6
Birbhum ..	7·9	9·4	25·1	16·3
Bankura ..	10·1	4·5	25·0	7·1
Midnapur ..	7·1	5·5	20·1	21·0
Hooghly ..	..	2·6	..	14·9
Howrah ..	4·7	·8	17·3	2·3
24 Parganas ..	8·9	10·2	28·7	33·9
Calcutta ..	13·2	10·9	33·9	23·6
Nadia ..	..	17·1	..	28·8
Murshidabad ..	11·0	19·6	22·8	35·6
Jessore ..	..	..	..	·4
Khulna ..	1·2	..	8·7	..
Rajshahi ..	..	·8	..	3·5
Dinaipur ..	..	7·6	·8	29·1
Jalpaiguri ..	..	2·5	..	2·5
Darjeeling ..	..	..	..	..
Rangpur ..	9·4	6·6	25·1	12·4
Bogra ..	2·8	3·5	12·0	16·0
Pabna ..	13·5	5·4	37·0	24·8
Malda ..	6·4	7·1	15·2	13·1
Dacca ..	..	10·7	..	28·1
Mymensingh ..	2·5	14·7	7·1	33·6
Faridpur ..	..	9·0	..	26·7
Bakarganj ..	..	..	..	..
Chittagong ..	11·2	17·3	24·2	44·0
Noakhali ..	5·2	2·6	13·9	11·2
Tippera ..	·8	4·3	3·9	18·4

46. **Anti-smallpox measures.**—Details of intensive campaigns of mass vaccination undertaken to control smallpox epidemics in the various affected

areas are given in the Annual Vaccination Report. Among other measures may be mentioned disinfection of infected houses, and propaganda work both by the local sanitary staff and the officers of the Government Publicity Department. The Sanitary Officers attached to the Bengal Public Health Department also took their proper share in advising and helping the local authorities in controlling outbreaks. The Government as in previous years contributed Rs. 50,000 towards promoting free vaccination in the rural areas.

47. Admission of smallpox patients in hospitals in Bengal.—441 persons suffering from smallpox were admitted

to the various hospitals in the province. Of these 124 cases were of a modified type, 82 discrete, 60 semi-confluent, 152 confluent and 23 hæmorrhagic. Nineteen were under one year of age, 27 between 1 and 10, 72 between 10 and 20, 160 between 20 and 30 and 163 above 30 years of age. Again 232 or a little over half were vaccinated, 65 said to have been successfully vaccinated but bearing no evidence of that, 121 were unvaccinated or reported to have been vaccinated unsuccessfully, 13 said to have been successfully revaccinated, while 10 previously unvaccinated were vaccinated during the incubation period of smallpox.

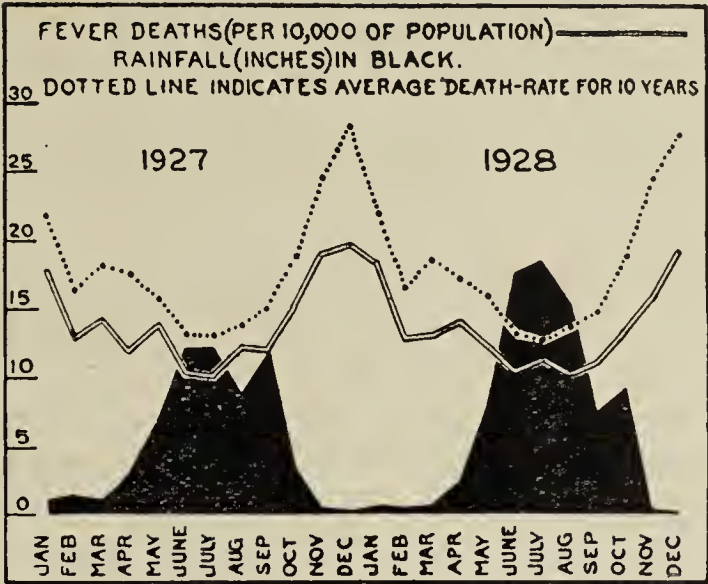
Statement showing the vaccinal condition of Smallpox patients treated at the various Medical Institutions during 1928.

Districts.	Total number of admissions from smallpox.	Number vaccinated as shown by the presence of one or more vaccination cicatrices.	Number stated to have been successfully vaccinated but bearing no vaccination cicatrices.	Number stated to be unvaccinated or vaccinated unsuccessfully bearing no vaccination mark.	Number previously unvaccinated but vaccinated during incubation of smallpox.	Number stated to have been successfully revaccinated.	Type of Smallpox.					Vaccination according to age.					
							Modified.	Discrete.	Semi-confluent.	Confluent.	Hæmorrhagic.	Under 1 year.	1 year and under 10.	10 years and under 20.	20 years and under 30.	Upwards.	
Burdwan
Birbhum	..	25	9	9	3	2	14	5	2	4	..	2	3	1	7	12	..
Bankura
Midnapur	..	4	3	1	..	..	1	1	..	2	..	..	..	..	3	1	..
Hooghly
Howrah	..	7	..	4	3	..	1	..	..	6	..	..	..	..	5	2	..
24-Parganas
Calcutta (Campbell Medical Hospital)	..	205	87	34	73	3	5	35	44	101	20	11	7	34	79	74	..
Nadia	..	7	7	..	..	..	4	..	2	1	..	..	1	2	2	2	..
Murshidabad	..	17	17	..	..	..	9	..	..	8	..	..	2	3	5	7	..
Jessore
Khulna	..	3	3	..	..	..	2	1	..	..	..	..	..	..	2	1	..
Rajshahi	..	52	43	4	5	..	23	18	1	9	1	2	4	10	17	19	..
Dinajpur
Jalpaiguri	..	40	18	..	22	..	31	9	..	..	..	..	6	7	18	9	..
Darjeeling	..	10	2	..	2	3	3	..	1	6	..	4	3	..	..	3	..
Rangpur
Bogra	..	3	2	1	..	..	2	..	..	1	..	..	..	..	1	2	..
Pabna	..	4	2	1	1	..	1	1	2	..	..	..	..	..	1	3	..
Malda	..	2	2	..	..	..	2	..	..	..	..	..	..	..	..	2	..
Dacca	..	12	9	3	..	..	5	1	4	1	1	..	1	1	5	5	..
Mymensingh	..	4	2	..	2	..	2	1	..	..	1	..	..	..	1	3	..
Faridpur	..	31	22	2	7	..	14	7	..	10	..	..	..	8	14	9	..
Bakarganj	..	1	1	..	..	..	..	..	..	1	..	..	..	..	..	1	..
Chittagong	..	14	3	6	3	2	5	3	4	2	..	..	..	6	..	8	..
Noakhali
Tippera
Total	..	441	232	65	121	10	13	124	82	60	152	23	19	27	72	160	163

Fevers.

48. **General Prevalence.**—752,003 deaths occurred from fevers, the death rate being 16·1 per mille, compared with 789,006 deaths with a rate of 17·0 per mille in the previous year, showing a reduction of 5·2 per cent. in 1928 from this cause. As against the average of the previous decennium, 21·48 per mille, the decrease was 25·0 per cent. in the death rate. This decrease was mainly due to a reduction in deaths from Malaria and Kala-azar, although the other sub-heads registered increases in 1928 compared with the previous year. Fevers were responsible for 63·2 per cent. of the total mortality, against 66·3 per cent. in 1927. The following table summarises the details regarding the various subheads of fevers :—

The following graph shows that the prevalence of fever in any year is in inverse proportion to the amount of rainfall in it.



50. **Fever Mortality by Divisions.**—Rajshahi headed the list while the 2

Analysis of Fever Deaths in 1927 and 1928.

Causes.	Number.		Percentage of increase + or decrease —.	Percentage of total fever mortality.		Death rates per mille.	
	1927.	1928.		1927.	1928.	1927.	1928.
Malaria fever	429,143	368,691	— 14·1	54·4	49·0	9·2	7·9
Enteric fever	5,077	9,297	+ 83·1	·06	1·2	0·11	0·20
Relapsing fever	2,894	3,859	+ 33·3	·04	0·5	0·06	0·08
Measles	1,425	1,884	+ 32·2	·02	0·2	0·03	0·04
Kala-azar	11,855	10,746	— 9·4	1·5	1·4	0·25	0·23
Other fevers	338,612	357,526	+ 5·6	42·9	47·5	7·3	7·7

49. **Seasonal Fever Mortality.**—Fever deaths were more numerous in January and December and were least so in June and August. January, April and June noticed an increase in the number of deaths over that in the corresponding months of the previous year, but every other month registered decreases. The number of cases was considerably reduced in every month when compared with the average of the previous ten years.

Fever Deaths.

Months.	Average, 1918-27.	1927.	1928.	Percentage of difference between 1927 and 1928.
January ..	101,941	83,290	86,136	+ 3·4
February ..	77,234	60,241	59,121	— 1·9
March ..	85,596	65,878	60,301	— 8·5
April ..	79,634	55,949	65,486	+ 17·0
May ..	73,345	64,404	56,950	— 11·6
June ..	60,508	47,951	48,189	+ 0·5
July ..	58,897	56,106	52,089	— 7·2
August ..	64,044	56,661	47,527	— 16·1
September ..	69,054	55,369	51,433	— 7·1
October ..	87,335	71,792	62,456	— 13·0
November ..	113,462	89,100	73,189	— 17·9
December ..	128,492	92,265	89,126	— 3·4

Eastern Bengal Divisions—Dacca and Chittagong footed it, Burdwan and Presidency occupying an intermediate position. The incidence of the disease in the various divisions thus followed its usual course. Compared with the decennial average, the reduction in the general death rate from fevers was shared proportionately by every division. As against the previous year it was reduced in Burdwan, Presidency and Dacca Divisions, though there was a slight rise in the other two divisions. 78·0 per cent. of the total deaths in Rajshahi Division were accounted for by fevers in 1928. This proportion along with that for other divisions showed a reduction when compared with the previous year and the decennium. The greatest improvement in this respect was noticed in Dacca Division and the least in Rajshahi. Turning to the last column which shows divisions as fever centres, it will be observed that 30·7 per cent. of the total fever mortality occurred in Rajshahi

alone, while Chittagong had comparatively the best record returning a percentage of only 11·4. This percentage in 1928 showed an excess in Rajshahi and Chittagong Divisions, but was reduced in others as compared with that of the previous year and the average of the previous ten years.

(b) *Relative Importance of fever as a cause of death.*—Rangpur and Dinajpur where the highest percentage of the total divisional deaths was due to fevers both in the previous year and the preceding decennium, stood at the top of the list again in 1928 though the incidence was comparatively reduced. In Calcutta,

Divisions.	Fever death rate per mille.			Proportion of total deaths due to fever, per cent.			Percentage of provincial fever mortality.		
	Average 10 years.	1927.	1928.	Average 10 years.	1927.	1928.	Average 10 years.	1927.	1928.
Burdwan	22·5	16·3	15·1	71·4	63·2	59·3	18·1	16·6	16·1
Presidency	21·0	16·9	15·2	67·8	58·7	56·6	19·9	20·3	19·1
Rajshahi	27·3	22·1	22·3	86·5	79·5	78·0	28·3	29·1	30·7
Dacca	17·9	14·2	13·2	71·9	61·8	56·0	23·0	23·1	22·6
Chittagong	18·3	14·7	14·8	77·3	68·5	65·7	10·6	10·8	11·4

51. **Fever Mortality by districts.**—(a) *Crude death rates.*—Dinajpur with a mortality rate from fevers of 30·3 per mille topped the list. Of the 7 other districts of Rajshahi Division, 5 had death rates varying between 20 and 30 per mille while the remaining 2 Pabna and Bogra registered rates of 16·0 and 15·3 respectively. The other districts returning rates between 20 and 30 are Birbhum (Burdwan Division) Jessore (Presidency Division) and Chittagong (Chittagong Division). Calcutta, Howrah and Tippera on the other hand registered rates below 10·0 per mille, the former showing the lowest mortality rate of 4·4 per mille only. The death rate was lower in every district when compared with the decennial average. As against the previous year there was a reduction in every district except in nine.

fevers were responsible for only 14·1 per cent. of the total deaths. There was a reduction in all the districts in this proportion compared with the previous decennium, especially marked in Dacca. With the exception of 8 districts all the others registered similar decreases as against the previous year.

Fevers as a percentage of the total mortality.

Fever Death rate per mille.

Districts.	Average of 1918-27.	1928.	Increase + or decrease —.	1927.	Increase + or decrease —.
Dinajpur ..	32·2	30·3	−1·9	29·8	+0·5
Rajshahi ..	31·3	23·8	−7·5	24·3	−0·5
Birbhum ..	30·8	21·9	−8·9	21·8	+0·1
Nadia ..	29·7	19·6	−10·1	20·4	−0·8
Murshidabad ..	29·2	18·2	−11·0	22·5	−4·3
Rangpur ..	26·7	23·1	−3·6	22·6	+0·5
Jalpaiguri ..	26·5	23·1	−3·4	23·2	−0·1
Darjeeling ..	26·4	21·1	−5·3	18·6	+2·5
Burdwan ..	26·3	16·8	−9·5	18·4	−1·6
Malda ..	25·0	20·1	−4·9	20·1	±0
Jessore ..	24·6	24·2	−0·4	23·3	+0·9
Pabna ..	24·5	16·0	−8·5	17·1	−1·1
Chittagong ..	24·5	21·9	−2·6	20·7	+1·2
Bankura ..	23·4	15·0	−8·4	16·7	−1·7
Bogra ..	22·2	15·3	−6·9	14·1	+1·2
Hooghly ..	21·6	14·7	−6·9	15·8	−1·1
Midnapur ..	21·5	14·5	−7·0	15·7	−1·2
Faridpur ..	20·5	15·5	−5·0	17·8	−2·3
Noakhali ..	19·9	16·3	−3·6	16·7	−0·4
Khulna ..	19·0	12·8	−6·2	16·4	−3·6
Bakarganj ..	18·3	14·4	−3·9	17·0	−2·6
24-Parganas ..	17·5	10·9	−6·6	13·1	−2·2
Mymensingh ..	17·4	12·7	−4·7	13·0	−0·3
Dacca ..	16·6	11·4	−5·2	11·2	+0·2
Tippera ..	13·7	9·8	−3·9	10·0	−0·2
Howrah ..	12·6	8·8	−3·8	10·4	−1·6
Calcutta ..	4·6	4·4	−0·2	4·5	−0·1

Districts.	Average for 1918-27.	1928.	Increase + or decrease —.	1927.	Increase + or decrease —.
Rangpur ..	91·9	82·1	−9·8	87·8	−5·7
Dinajpur ..	91·2	87·8	−3·4	87·8	±0
Chittagong ..	88·0	74·6	−13·4	82·3	−7·7
Rajshahi ..	84·9	71·9	−13·0	77·1	−5·2
Pabna ..	84·1	72·0	−12·1	67·4	+4·6
Jalpaiguri ..	83·0	81·3	−1·7	85·0	−3·7
Bogra ..	82·9	68·7	−14·2	68·7	±0
Malda ..	82·8	73·0	−9·8	69·1	+3·9
Jessore ..	82·2	80·6	−1·6	78·5	+2·1
Birbhum ..	82·1	73·9	−8·2	74·9	−1·1
Nadia ..	80·3	67·1	−13·2	72·7	−5·6
Murshidabad ..	77·5	62·0	−15·5	66·6	−4·6
Burdwan ..	77·3	64·3	−13·0	69·8	−5·5
Faridpur ..	77·1	57·9	−19·2	64·8	−6·9
Noakhali ..	74·8	64·8	−10·0	63·9	+0·9
Mymensingh ..	74·2	59·1	−15·1	61·8	−2·7
Midnapur ..	72·9	60·5	−12·4	65·2	−4·7
Bankura ..	71·9	63·8	−8·1	66·2	−2·4
Hooghly ..	71·0	56·8	−14·2	65·1	−8·3
Darjeeling ..	70·2	67·0	−3·2	66·3	+0·7
Tippera ..	70·1	57·4	−12·7	60·0	−2·6
Dacca ..	68·9	46·7	−22·2	57·2	−10·5
Khulna ..	68·3	56·7	−11·6	58·5	−1·8
Bakarganj ..	67·1	60·2	−6·9	63·3	−3·1
24-Parganas ..	65·3	48·4	−16·9	54·6	−6·2
Howrah ..	44·5	33·7	−10·8	35·9	−2·2
Calcutta ..	15·0	14·1	−0·9	13·2	+0·9



(c) *Districts as Fever Centres.*—Mymensingh, Rangpur and Dinajpur as usual reported the highest percentages of the total provincial mortality due to fevers and Darjeeling and Calcutta the lowest. Of the 15 districts showing a reduced percentage of fever deaths to total provincial fever mortality in the previous year compared with the decennium, 13 continued improving in 1928, while in the remaining 2 this proportion was either very slightly increased as in Darjeeling or continued the same as in Rajshahi. In addition, Khulna and Howrah also showed signs of improvement. Against the previous year it was increased in 14 districts, reduced in 11 and remained unchanged in 2 others. The last column of the table below shows the percentage of total reported malaria deaths in each district in 1928. From this it will be observed that the highest percentage of malaria deaths was reported from Dinajpur, followed by Jessore, Rangpur and Rajshahi and the lowest from Noakhali.

Percentages of Provincial Fever Mortality occurring in each district.

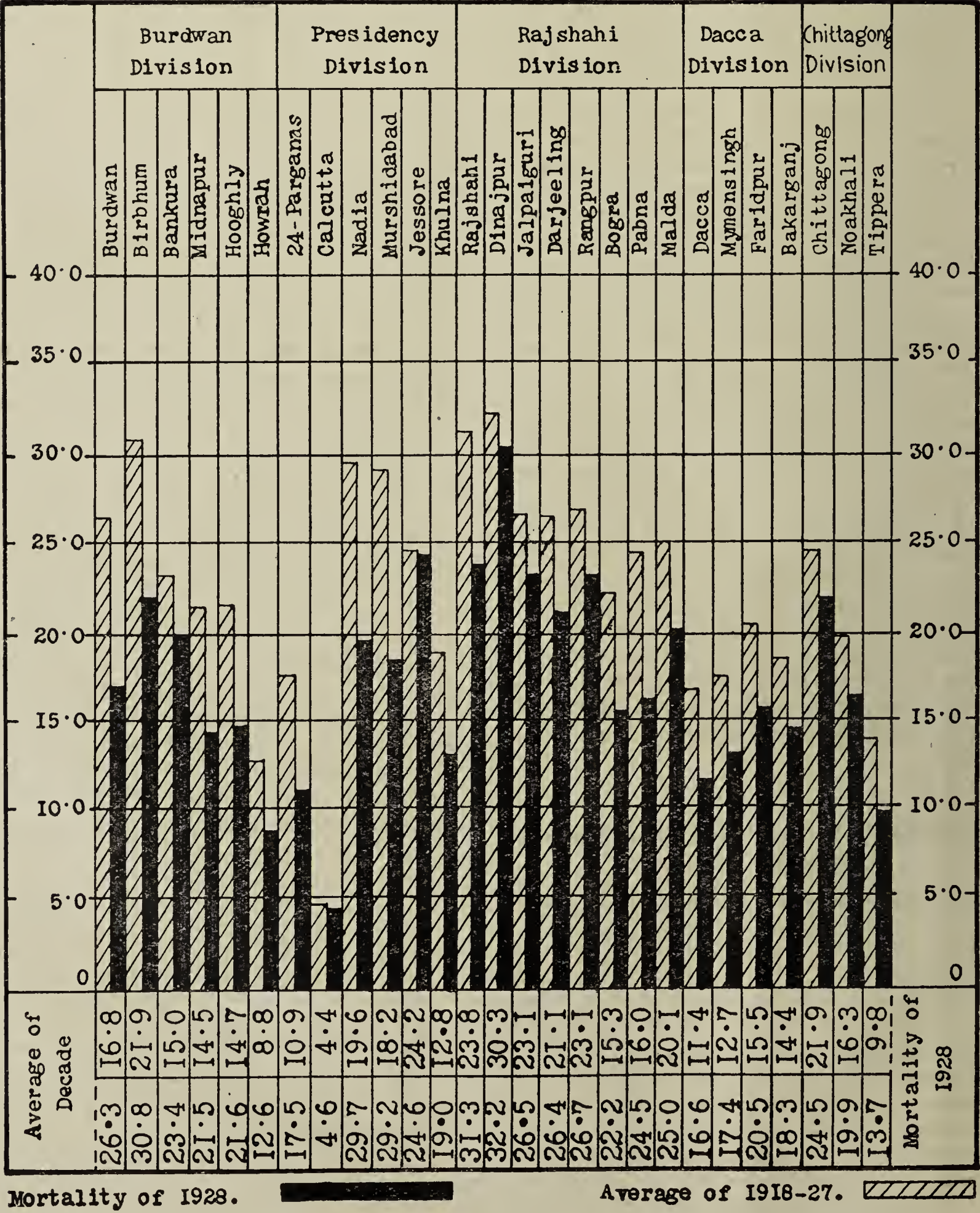
Districts.	Average, 1918-27.	1928.	or + decrease—.	1927.	or + decrease—.	Percentage of total reported malaria deaths, 1928.
Mymensingh ..	8.4	8.2	— .2	8.0	+ .2	.9
Rangpur ..	6.7	7.7	+1.0	7.2	+ .5	9.4
Midnapur ..	5.7	5.1	—0.6	5.3	— .2	4.7
Dinajpur ..	5.5	6.9	+1.4	6.4	+ .5	11.9
Dacca ..	5.2	4.7	— .5	4.4	+ .3	1.3

Districts.	Average, 1918-27.	1928.	or + decrease—.	1927.	or + decrease—.	Percentage of total reported malaria deaths, 1928.
Bakarganj ..	4.8	5.0	+ .2	5.6	— .6	.2
Rajshahi ..	4.7	4.7	± 0	4.6	+ .1	9.3
Faridpur ..	4.6	4.6	± 0	5.1	— .5	4.3
Nadia ..	4.4	3.9	— .5	3.9	± 0	6.4
24-Parganas ..	4.3	3.6	— .7	4.1	— .5	1.8
Jessore ..	4.2	5.5	+1.3	5.1	+ .4	9.9
Chittagong ..	3.9	4.7	+ .8	4.2	+ .5	.2
Burdwan ..	3.8	3.2	— .6	3.4	— .2	3.2
Tippera ..	3.8	3.6	— .2	3.5	+ .1	1.2
Murshidabad ..	3.7	3.0	— .7	3.6	— .6	5.5
Pabna ..	3.4	2.9	— .5	3.0	— .1	5.1
Noakhali ..	2.9	3.2	+ .3	3.1	+ .1	.1
Khulna ..	2.8	2.5	— .3	3.0	— .5	3.0
Birbhum ..	2.6	2.5	— .1	2.3	+ .2	1.4
Jalpaiguri ..	2.5	2.9	+ .4	2.7	+ .2	5.6
Malda ..	2.5	2.6	+ .1	2.5	+ .1	5.3
Bankura ..	2.4	2.0	— .4	2.2	.2	2.0
Hooghly ..	2.3	2.1	— .2	2.2	— .1	2.7
Bogra ..	2.3	2.1	— .2	1.9	+ .2	2.5
Howrah ..	1.3	1.2	— .1	1.3	— .1	.9
Darjeeling ..	.7	.8	+ .1	.7	+ .1	.7
Calcutta ..	.5	.6	+ .1	.6	± 0	.4

52. **Fever Mortality in towns and rural areas.**—Of the total fever deaths, 16,634 occurred in urban and 735,369 in rural areas, against 18,167 and 770,839 respectively in 1927, showing a decrease of 1,533 and 35,470 in 1928. The death rate was reduced by 8.6 per cent. in towns and 4.5 per cent. in rural areas. 22.1 per cent. of the total deaths in urban and 66.0 per cent. in rural areas were due to fevers, against 22.6 and 69.5 respectively in the previous year. Of the total fever deaths in the province 2.2 per cent. occurred in towns and 97.8 per cent. in rural areas. Fifteen towns headed by Kurseong (24.5) returned death rates of 10.0 per mille and above, Asansol alone registered a rate below 1.0 per mille, while the rest had rates varying between 1 and 10 per mille.

			Municipal area.	Rural area.
Fever deaths per mille—				
1927 ..	..	..	5.8	17.7
1928 ..	..	..	5.3	16.9
Proportion of total deaths due to fever (per cent.)—				
1927 ..	..	..	22.6	69.5
1928 ..	..	..	22.1	66.0
Percentage of provincial fever mortality—				
1927 ..	..	..	2.3	97.7
1928 ..	..	..	2.2	97.8

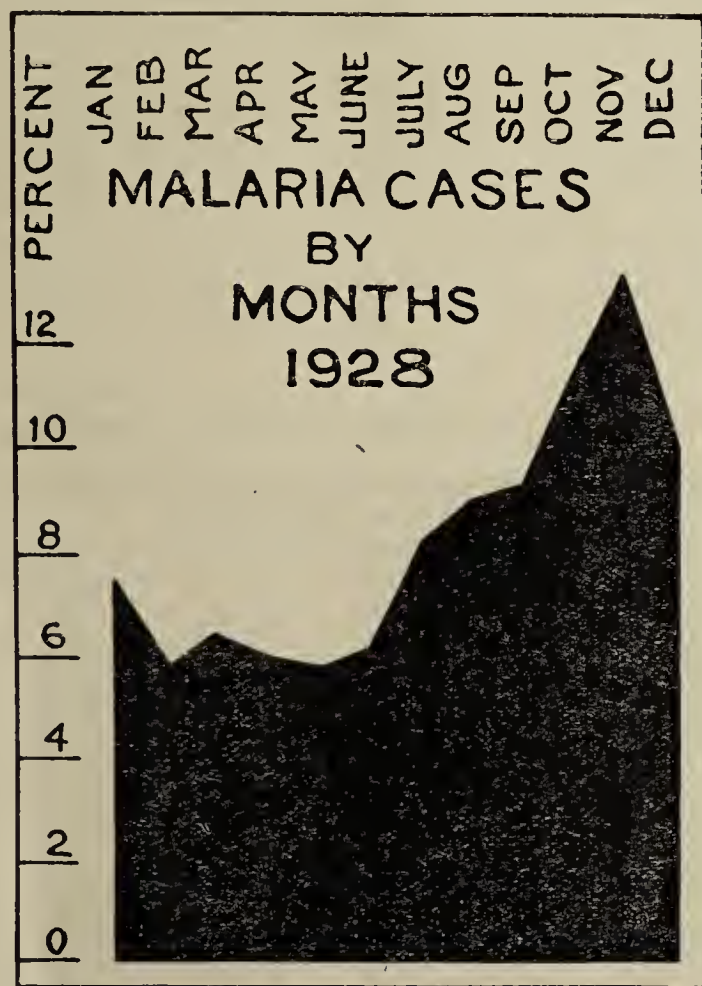
Graph Showing the Relative Intensity of Fever Mortality in each district of Bengal Presidency during the year 1928 and the Average of Decade 1918—27.



Malaria.

53. **General Prevalence.**—368,691 deaths with 7·9 per mille as the death rate were caused by malaria in 1928 against 429,143 deaths and 9·2 death rate in 1927, showing a reduction of 60,452 in the number of deaths and of 14·1 per cent. in its death rate. Malaria was responsible for 49·03 per cent. of the fever deaths and 31·0 per cent. of the total mortality, against the previous year's percentages of 54·4 and 36·1 respectively.

54. **Seasonal incidence.**—The following diagram shows the proportional percentage of malaria cases to total admissions to the various hospitals in the province month by month. It will be observed that the rise began in June and was continued till November when after attaining its peak it began to fall.



and 43·7 per cent. respectively. 79·7 per cent. of the fever deaths in Rajshahi and 69·2 per cent. in Presidency were due to malaria, whereas in Dacca and Chittagong this proportion was only 14·7 and 6·3 per cent. respectively. Again about half of the total malaria deaths occurred in Rajshahi Division alone, a little more than a quarter in Presidency and less than 25 per cent. in Burdwan, Dacca and Chittagong combined.

Divisions.	Malaria deaths per mille of population.		Proportion of fever deaths due to malaria (per cent.).		Percentages of provincial malaria mortality.	
	1927.	1928.	1927.	1928.	1927.	1928.
Burdwan ..	7·4	6·8	45·3	45·2	13·9	14·9
Presidency ..	12·2	10·5	72·4	69·2	27·0	27·0
Rajshahi ..	19·4	17·8	87·5	79·7	46·7	49·9
Dacca ..	3·4	1·9	23·9	14·7	10·2	6·7
Chittagong ..	1·6	·9	11·0	6·3	2·2	1·5

56. **Fever indices by Divisions.**—From the table below showing the fever indices or the ratios of new admissions from malaria to the various medical institutions in the province to the total new admissions from all diseases since 1920 it will be noticed that the provincial fever index started markedly on its decline since 1923 and has continued to do so with some variations up to the year under review. The same improvement is noticed in Burdwan, Presidency and Rajshahi Divisions, though there have been slight increases in Eastern Bengal Divisions in 1928 compared with the previous year. Compared with 1921 which has been the worst year for malaria during this period a decline of 4·3 seems to have occurred in Burdwan, 19·9 in Presidency, 5·0 in Rajshahi, 7·3 in Dacca and 4·1 in Chittagong Divisions.

Fever indices in Divisions.

Divisions.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
Burdwan ..	48·2	48·5	48·1	47·3	40·6	44·1	43·4	45·1	44·2
Presidency ..	45·9	44·7	41·8	29·2	27·4	31·8	29·6	27·9	24·8
Rajshahi ..	34·6	36·8	33·0	37·1	32·9	38·2	33·4	32·8	31·8
Dacca ..	17·5	19·4	16·8	17·4	16·3	15·7	12·9	11·9	12·1
Chittagong ..	13·1	14·9	14·3	16·3	13·2	11·6	11·2	9·7	10·8
Total for the Province ..	34·8	35·4	33·1	28·7	26·0	29·2	26·7	25·2	24·5

55. **Malaria by Divisions.**—There was very little malaria in Dacca and Chittagong Divisions. Crude death rates from malaria were reduced in every division in 1928 especially in Dacca and Chittagong where the decrease was 44·1

57. **Malaria by districts.**—Four of the districts reported death rates above 20·0 per mille, Dinajpur heading the list 5 others between 10 and 20 per mille, 14 between 1 and 10 per mille and the remaining 4 below 1 per

mille. Compared with the previous year, malaria diminished in all the districts but 8, in 7 of which it showed an excess and in one no change in its death rate. The last 3 columns show fever indices for these very districts and go to prove how unreliable a factor the crude death rate is for judging the malaria incidence in any particular locality, e.g., the death rates appear to have increased in Dinajpur, Malda, Darjeeling, Birbhum and Dacca districts, whereas the fever indices in these areas have gone down as compared with the previous year; the reverse is the case in Jalpaiguri, Jessore Rangpur, Hooghly, Midnapur, Noakhali, Chittagong, Mymensingh and Bakarganj.

Death rates from Malaria per mille.

Districts.	1927.	1928.	Increase + or decrease —.	Fever indices.		
				1927.	1928.	In- crease + or dec- rease —.
Dinajpur ..	24.2	25.8	+1.6	38.9	38.1	—
Rajshahi ..	23.6	23.0	—0.6	34.9	25.8	—
Jalpaiguri ..	22.8	22.4	—0.4	42.0	46.2	+
Jessore ..	21.2	21.2	±0	41.3	44.3	+
Rangpur ..	20.6	13.9	—6.7	27.2	30.0	+
Murshidabad ..	20.2	16.1	—4.1	48.8	38.5	—
Malda ..	18.6	19.8	+1.2	33.0	28.3	—
Nadia ..	16.9	15.8	—1.1	52.1	43.5	—
Pabna ..	15.5	13.5	—2.0	33.7	31.7	—
Faridpur ..	15.0	7.1	—7.9	24.8	23.9	—
Hooghly ..	12.6	9.3	—3.3	49.8	53.7	+
Khulna ..	11.8	7.7	—4.1	25.1	23.2	—
Burdwan ..	10.5	8.2	—2.3	60.0	51.0	—
Bogra ..	8.7	8.8	+0.1	33.5	37.9	+
Midnapur ..	7.5	6.5	—1.0	37.7	37.9	+
Darjeeling ..	7.4	9.7	+2.3	17.6	17.1	—
Howrah ..	4.4	3.2	—1.2	38.1	36.1	—
24-Parganas ..	4.2	2.7	—1.5	33.9	28.3	—
Birbhum ..	3.5	6.0	+2.5	40.1	39.9	—
Bankura ..	3.4	7.1	+3.7	34.4	39.4	+
Tippera ..	1.9	1.6	—0.3	7.5	7.1	—
Noakhali ..	1.4	0.3	—1.1	11.6	12.5	+
Chittagong ..	1.3	0.4	—0.9	11.8	16.5	+
Calcutta ..	1.3	1.2	—0.1	8.9	8.5	—
Mymensingh ..	1.0	0.6	—0.4	11.7	12.6	+
Dacca ..	1.0	1.6	+0.6	8.8	8.1	—
Bakarganj ..	0.7	0.3	—0.4	9.1	9.5	+

58. **Malaria in towns and rural areas.**—4,267 deaths with a death rate of 1.4 per mille occurred in towns and 364,424 deaths with a death rate of 8.4 per mille in rural areas, compared with 5,513, 1.8 and 423,630, 9.7 respectively in 1927. The decrease in the death rate amounted to 22.2 per cent. in towns and 13.4 per cent. in rural areas. The rural rate was exactly six times that of the urban rate. No deaths were reported from 18 towns. Four towns (Kotchandpur 15.2 per mille, Dhulian 13.3, Maheshpur 10.8 and Chakdaha 10.3), all situated in the Presidency Division, returned death rates above 10.0 per mille; 44 others below 1.0 per mille and the rest between 1 and 10 per mille. Narayanganj and Midnapur each returned the lowest rate, .03 per mille.

59. **Quinine Consumption.**—6,741.3 lbs. of quinine were consumed in the whole province in 1928 as against 7,214.5 lbs. in the previous year, showing a decrease of 473.2 lbs. due most probably to a gradual reduction in the incidence of malaria during the last few years. This diminution in the consumption was shared by all the Divisions except Rajshahi.

Total quantity of quinine consumed by Divisions.

Divisions.	Total quantities in lbs.		Increase + or decrease —.
	1927.	1928.	
Burdwan ..	1,065.9	786.6	—279.3
Presidency ..	1,639.2	1,289.9	—349.3
Rajshahi ..	1,111.0	1,112.5	+105
Dacca ..	2,034.6	1,949.0	—85.6
Chittagong ..	1,363.8	1,603.3	+239.5
Total ..	7,214.5	6,741.3	—473.2

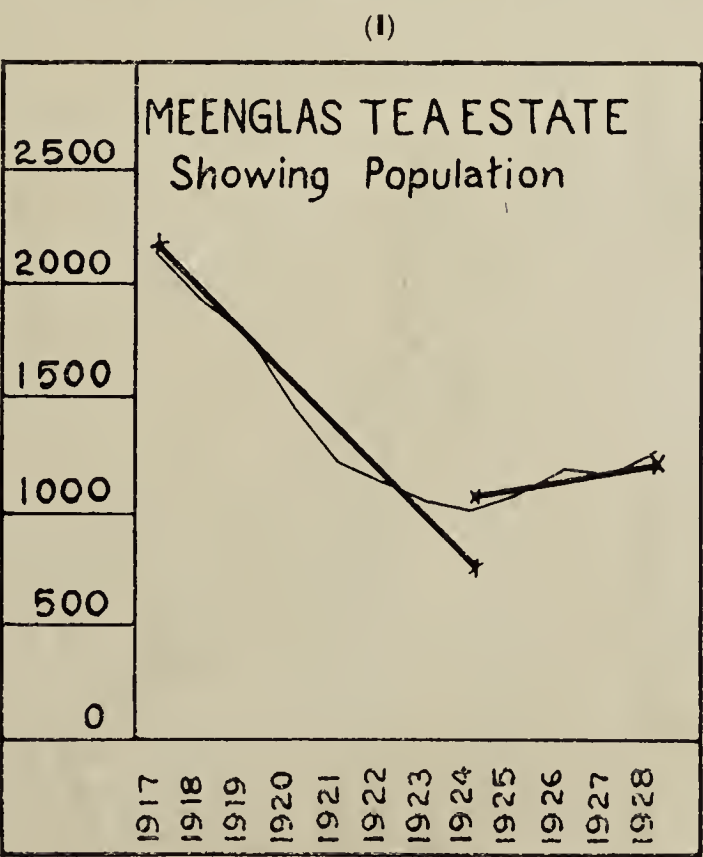


Turning to the consumption in the various districts it will be observed from the table below that it was reduced in all the districts except in 7, three of which Rangpur, Rajshahi and Bogra belong to Rajshahi, Jessore to Presidency, Mymensingh to Dacca, and Chittagong and Tippera to Chittagong Divisions. In five of these districts, the fever indices show an increase over those of the previous year, while in the remaining two, Rajshahi and Tippera, there is a marked reduction, especially in the former district. In six others—Midnapur, Hooghly and Bankura in the Burdwan Division, Jalpaiguri in Rajshahi, Bakarganj in Dacca and Noakhali in Chittagong, while the fever indices have increased, the consumption has been reduced.

Quinine Statement, 1928.

Districts.	Total quinine consumed in lbs.		Increase + or decrease — per cent.	Grains of quinine consumed per head of the population.		In-crease or de-crease in grain per head.	Fever Indices.		Increase + or decrease —.
	1927.	1928.		1927.	1928.		1927.	1928.	
Mymensingh	776.0	841.7	+ 8.5	1.1	1.2	+0.1	11.7	12.6	+ 0.9
Chittagong	508.5	729.7	+43.5	2.2	3.2	+1.0	11.8	16.5	+ 4.7
Tippera	517.1	589.1	+13.9	1.3	1.5	+0.2	7.5	7.1	— 0.4
Jessore	465.7	506.2	+ 8.6	1.9	2.0	+0.1	41.3	44.3	+ 3.0
Faridpur	502.2	433.7	—13.6	1.6	1.3	—0.3	24.8	23.9	— 0.9
Dacca	390.2	349.1	—10.5	0.9	0.8	—0.1	8.8	8.1	— 0.7
Bakarganj	366.2	324.5	—11.3	1.0	0.9	—0.1	9.1	9.5	+ 0.4
Noakhali	338.2	284.5	—15.8	1.4	1.3	—0.1	11.6	12.5	+ 0.9
Pabna	289.7	280.5	— 3.1	1.5	1.4	—0.1	33.7	31.7	— 2.0
Nadia	365.7	262.2	—28.3	1.7	1.2	—0.5	52.1	43.5	— 8.6
Burdwan	321.7	227.4	—29.3	1.6	1.1	—0.5	60.0	51.0	— 9.0
Rangpur	193.5	208.8	+ 7.9	0.5	0.6	+0.1	27.2	30.0	+ 2.8
Rajshahi	173.7	195.4	+12.4	0.8	0.9	+0.1	34.9	25.8	— 9.1
Midnapur	209.7	191.4	— 8.7	0.5	0.5	±0	37.7	37.9	+ .02
Khulna	256.0	171.4	—33.0	1.2	0.8	—0.4	25.1	23.2	— 1.9
24-Parganas	225.1	161.1	—28.4	0.6	0.4	—0.2	33.9	28.3	— 5.6
Bogra	111.4	152.0	+36.4	0.7	1.0	+0.3	33.5	37.9	+ 4.4
Hooghly	178.8	121.7	—31.9	1.2	0.8	—0.4	49.8	53.7	+ 3.9
Dinajpur	124.0	115.4	— 6.9	0.5	0.5	±0	38.9	38.1	— 0.8
Bankura	150.1	114.2	—23.9	1.0	0.8	—0.2	34.4	39.4	+ 5.0
Murshidabad	220.5	106.8	—51.1	1.2	0.6	—0.6	48.8	38.5	—10.3
Calcutta	106.2	82.2	—22.5	0.7	0.5	—0.2	8.9	8.5	— 0.4
Malda	128.5	78.8	—38.6	0.9	0.6	—0.3	33.0	28.3	— 4.7
Birbhum	121.1	73.1	—39.6	1.0	0.6	—0.4	40.1	39.9	— 0.2
Jalpaiguri	69.7	62.2	—10.7	0.5	0.5	±0	42.0	46.2	+ 4.2
Howrah.. ..	84.5	58.8	—30.4	0.6	0.4	—0.2	38.1	36.1	— 2.0
Darjeeling	20.5	19.4	— 5.3	0.5	0.5	±0	17.6	17.1	— 0.5
Total	7,214.5	6,741.3	— 6.4	..	..	..	..	..	..

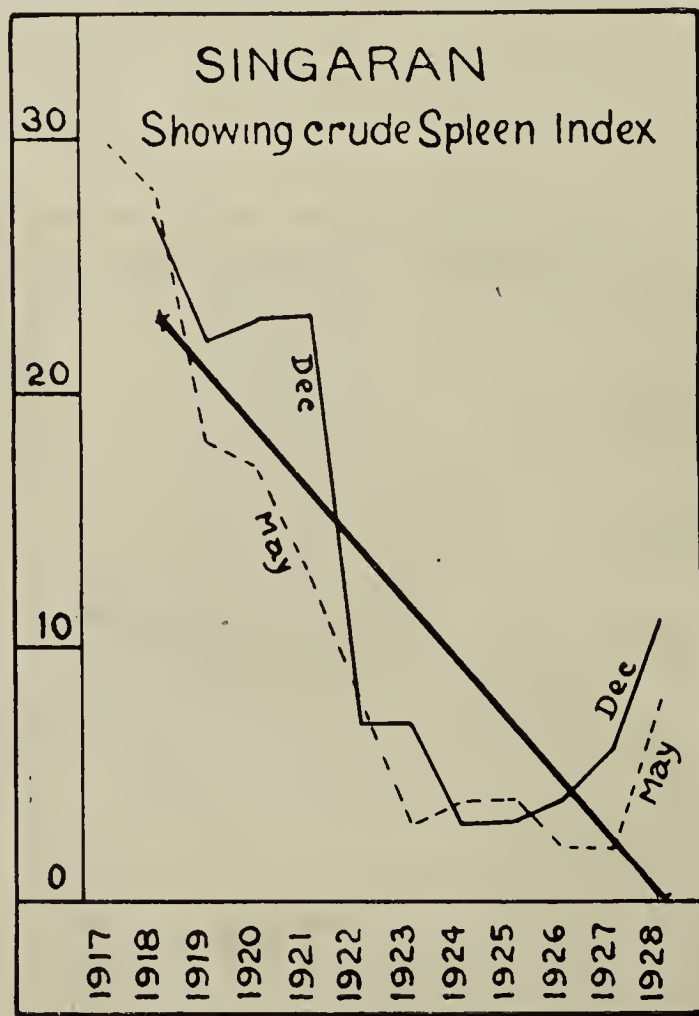
60. **Experimental Anti-malaria Schemes.**—(a) *Meenglas scheme.*—The scheme comprises permanent works such as sub-draining some of the jhoras or hill-streams, and training and straightening others. All the other jhoras are sprayed with kerosene. The total population of the garden came down up to 1924 and then began to rise (vide chart I). The spleen index of the whole garden first rose up to 1920 and then since the introduction of the spraying of the jhoras with kerosene over the rest of the garden in which engineering works were not carried out the spleen index has been coming down (vide chart II). The trend line shows the tendency of the rise and fall in both the periods. Since 1923 the spleen index is almost stationary.



(ii)



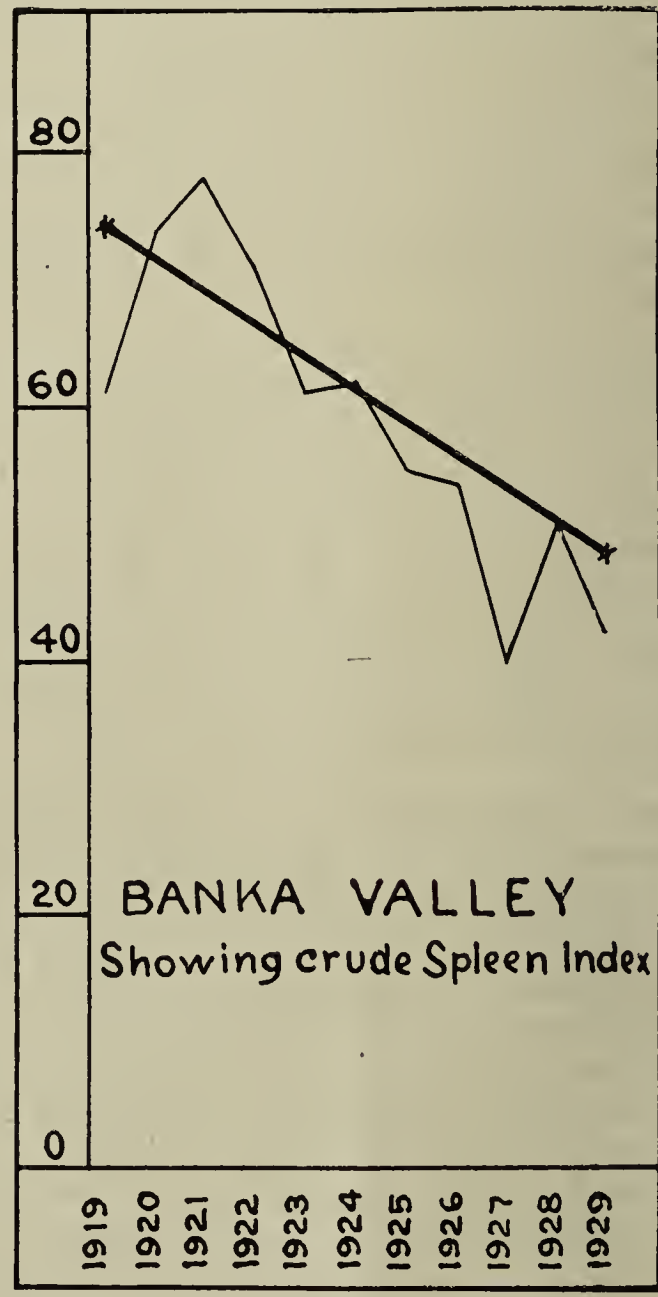
(b) *Singaran-Toposi Scheme*.—The chart showing the spleen index of the area under the Singaran anti-malaria schemes shows reduction in the spleen. The trend line has been drawn by the least square method. The curve shows



that there is an upward tendency which may be due to the cycle which is natural to malaria. As the control area is contiguous to that under operation and there being every possibility of its being affected by the scheme, the figures have been put together and shown in the curve.

(c) *Banka Valley Scheme*.—It is an experimental scheme to see if flushing the beel of Isifabad with Damodar water during the rainy season will improve the health of the neighbouring villages. Water was introduced through a cut in the embankment along the Banka river for 16 days in July, 4 days in August, nil in September and 9 days in October. The condition of the crop was very good.

The chart shows the crude spleen index of the whole area taken together from 1919 to 1929 January. In this a gradual fall in the spleen index is noted.



(d) *Jangipur flood flush scheme*.—During the monsoon of the year under concern flood water from the Bhagirathi entered the system only for about 3 weeks during the month of August. The sluice gates are worked by the municipal authority. The spleen index was taken once in December 1928 and the spleen

indices of the various years have been charted out as in the figure attached which shows the trend of reduction in the spleen rate since 1918. It is now a negligible factor.



61. **Krishnagar Malaria Research Laboratory.—(a) Infectivity of mosquitoes in nature.**—(1) During the period from July 1926 to December 1928, 13,519 anophelines were dissected, out of which 7,089 were of the fuliginosus group, including *A. fuliginosus*, *A. pallidus* and *A. philippinensis*; 143 *A. minimus*, 1,302 *A. rossi*, 4,479 *A. vagus*, 21 *A. stephensi*, 168 *A. culicifacies*, 190 *A. sinensis*, 4 *A. barbirostris* and 123 *A. pseudo-jamesi*. They were collected either by means of traps placed in the villages or by collection from dwelling houses.

(2) Except those of the fuliginosus group none showed sporozoits in their salivary glands. In table I the results of dissection of the mosquitoes of the fuliginosus group are given. The infection rate of the whole group taken together varies from zero per cent. to 0.73 per cent., details of which may be seen in table I. Since the separation of the three species in this group 3,944 type fuliginosus, 1,236 type pallidus and 770 type philippinensis were dissected of which 6,3 and 15 respectively were found infected giving the infection rate of 0.15, 0.24 and 2.0 per cent. respectively.

Table 1.—Sporozoit Rate of *A. fuliginosus* group in nature.

Months.	1926.			1927.			1928.			Total of 3 years.		
	Total number dissected.	Number with sporozoits.	Sporozoit rate.	Total number dissected.	Number with sporozoits.	Sporozoit rate.	Total number dissected.	Number with sporozoits.	Sporozoit rate.	Total number dissected.	Number with sporozoits.	Sporozoit rate.
January	Nil	Nil	Nil	184	0	Nil	138	0	Nil	322	0	Nil
February	Nil	Nil	Nil	223	2	0.9	187	1	0.53	410	3	0.73
March	Nil	Nil	Nil	91	0	Nil	135	0	Nil	226	0	Nil
April	Nil	Nil	Nil	68	0	Nil	53	0	Nil	121	0	Nil
May	Nil	Nil	Nil	45	0	Nil	1	0	Nil	46	0	Nil
June	Nil	Nil	Nil	13	0	Nil	7	0	Nil	20	0	Nil
July	26	0	Nil	53	0	Nil	17	0	Nil	96	0	Nil
August	144	0	Nil	170	1	0.6	162	0	Nil	476	1	0.21
September	96	0	Nil	268	2	0.75	581	4	0.7	945	6	0.63
October	138	0	Nil	389	4	1.0	731	3	0.41	1,258	7	0.55
November	170	3	1.7	651	5	0.76	1,057	3	0.28	1,878	11	0.58
December	211	1	0.47	387	0	Nil	633	1	0.15	1,231	2	0.16
Total	785	4	0.5	2,542	14	0.55	3702	12	0.32	7,029	30	0.4

(b) Experimental Infection of Mosquitoes.—(1) Laboratory-bred mosquitoes were fed on malaria patients attending our treatment centres and were kept at room temperature as far as possible. They were put in wide-mouthed bottles covered with a net over which a pellet of moist cotton and a few grapes were placed. When no malaria patient was available, they were kept alive by being fed on guinea-pigs. The results of dissection of such artificially fed mosquitoes of the fuliginosus group are given in table 2, the last column of which shows that the mosquitoes commenced to be infected in August and continued till February. In 1926, sporozoits could be developed in the months of October, November and December; in 1927 in the months of August, September and November; and in 1928 in the months of January and February and again in October, November and December.

(2) In none of the mosquitoes dissected within ten days of first positive feed

could sporozoits be found, the earliest occurrence was on the 14th day after the first feed. The percentage of infectivity rises with the length of life of the mosquitoes. Out of 326 mosquitoes under experiment, 97 were dissected within 10 days of the first positive feed, none of which were found with sporozoits; 66 were dissected between the 11th and 15th day, out of which 2, that is, 3 per cent. were found infected; whereas out of 163 dissected after the 15th day, 23, that is, 14 per cent. showed sporozoits. Record was kept of the species of malaria parasites on which they were fed and it was found that this group can develop all the three species.

(3) Similar experiments were carried on with *A. vagus*, *A. sinensis* and *A. stephensi*. In case of *A. vagus*, out of 168 mosquitoes experimented with only one out of 14 developed sporozoits in November 1927. In case of *A. stephensi* one out of 12 developed sporozoits in July 1927, and none out of 53 *A. sinensis* became infective.

Table 2.—Infectivity of fuliginosus group by artificial method.

Months.	1926.			1927.			1928.			Total of 3 years.		
	Number under experiment.	Number with sporozoits.	Sporozoit rate.	Number under experiment.	Number with sporozoits.	Sporozoit rate.	Number under experiment.	Number with sporozoits.	Sporozoit rate.	Number under experiment.	Number with sporozoits.	Sporozoit rate.
January				7	0	0	22	1	4.5	29	1	3.4
February				11	0	0	10	1	10.0	21	1	4.8
March				19	0	0	7	0	0	26	0	0
April				12	0	0	3	0	0	15	0	0
May				4	0	0	Nil	Nil	Nil	4	0	0
June				Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
July				5	0	0	Nil	Nil	Nil	5	0	0
August	8	0	Nil	15	1	6.6	Nil	Nil	Nil	23	1	4.3
September	6	0	Nil	30	3	10.0	4	0	0	40	3	7.5
October	13	7	53.3	21	0	Nil	13	2	15.4	47	9	19.1
November	40	3	7.5	8	1	12.5	14	3	20.7	62	7	11.3
December	24	1	4.1	15	0	Nil	15	2	13.3	54	3	5.6

62. Anti-malaria activities of the District Boards.—Burdwan—malaria cases were treated by the District Board at their 24 permanent dispensaries, and 13 temporary fever dispensaries (October 1928 to January 1929) and at the 22 Union Board dispensaries. Quinine was distributed free through the Presidents of some Union Boards, Sanitary Inspectors of Health Circles and the 61 registered anti-malaria societies, which received help from the District Board anti-malaria committee. Birbhum—(1) distribution of cinchona febrifuge and quinine sulphate tablets to affected parts through the Presidents of Union Boards, vaccination inspecting staff and officers in charge of health circles, (2) deputation of doctors to the affected localities for free treatment of malaria patients, (3) formation of 28 anti-malaria societies whose main object was to prevent the spread of malaria by cutting jungle, kerosening tanks and ditches, treating malaria cases with cinchona or quinine and filling up of pools of water, and (4) magic lantern demonstration of preventible diseases. Bankura—the rural health suffered much due to an epidemic of malarial fever of a malignant type throughout the district. No major or minor operation was undertaken, except the distribution of quinine sulphate tablets through the Presidents of Union Boards, local school Presidents, Head Masters, local influential people, and the local benevolent societies. Medical help was given in affected villages by the Health Officer, Sanitary Inspectors and their staff. Midnapur—20 anti-malaria societies worked during the year. Forty-one doctors were engaged for the treatment of malaria in malaria centres, who treated 60,110 new patients; quinine and cinchona were distributed to 25,276 patients by the public health staff. 1,12,418 malaria patients were treated at the dispensaries. Hooghly—78 co-operative anti-malaria committees and public health societies cleaned tanks, filled up dobas, cut drains and distributed quinine. Howrah—a few anti-malaria societies were organised and one registered. Quinine and cinchona tablets and mixtures were freely supplied to these. Union Boards got special anti-malaria grants from the District Board and the local Government. 24-Parganas—anti-malaria and anti-kala-azar work was carried on in 57 kala-azar centres and 124 sub-centres under them

and in 19 dispensaries and 33 sub-centres under them. A non-recurring grant of Rs. 6,000 received from Government and a contribution of Rs. 3,000 from the district fund were distributed to 66 Union Boards and 20 registered anti-malaria societies. Nadia—minor operations were carried out by rural health circles and also by health societies; 488 dobas were kerosened and 800 children quininised by 13 thana health circles; the 15 co-operative health societies kerosened 315 dobas, quininised 354 children, cleared 400 bighas of jungle and cut 16 furlongs of drains; 8 of them conducted treatment centres as well; 255 lbs. of quinine were distributed through societies and Union Boards, 160 lbs. through 5 kala-azar treatment centres and 13 rural health circles. Murshidabad—no anti-malaria operation was undertaken during the year directly by the District Board. There are 2 registered anti-malaria societies. Jessore—quinine and cinchona were distributed through the District Board health staff, Union Committees, Union Boards, anti-malaria societies, kala-azar treatment centres, President Panchayats, teachers and local gentlemen. Jungle clearing, doba filling, kerosening dobas and ditches and draining stagnant water pools were done by anti-malaria societies. Khulna—no major anti-malaria scheme was carried out; minor works were taken up by anti-malaria and other health societies in their respective areas. The number of registered health and anti-malaria societies increased from 78 in 1927 to 154 in 1928. Free distribution of Government quinine and cinchona was made systematically through the various societies, some Presidents of Union Boards and District Board health staff. 44,313 patients were treated, of which 35,536 were treated at dispensaries, 2,788 by health and anti-malaria societies, 5,989 by the District Board staff, including sanitary inspectors in charge of health circles.

Rajshahi—malaria patients were generally treated at District Board dispensaries and doctors of the 12 groups of kala-azar treatment centres. Two co-operative anti-malaria societies were established at Talanda and Puthia. Dinajpur—quinine was distributed free by the various agencies. Propaganda was undertaken by lantern lectures. One anti-malaria co-operative society

was formed at Raiganj and registered. Darjeeling—the death rate from malaria was highest in the Siliguri subdivision. No anti-malaria operation was carried out. Malda—11 registered anti-malaria societies worked during the year; quinine was distributed free, while anti-malaria work in schools was carried out according to the approved plan. Bogra—reclamation of jungle and drains was taken up by two anti-malaria societies in Khanjanpur and Sujaitpur, as also by some of the Union Boards who received contributions from the District Board for this purpose. Distribution of quinine and treatment of malaria cases was done at all kala-azar treatment centres. One new anti-malaria society was started at Sujaitpur and there is a proposal to open one more at Noadabaga. Pabna—minor anti-malaria operations including quinine distribution and treatment of patients were carried out by most of the registered anti-malaria and public health societies. Three anti-malaria societies have recently been formed and registered. Rangpur—the following anti-malaria operations were undertaken, (1) distribution of quinine through kala-azar centres, anti-malaria and health societies, union boards and subordinate public health staff, such as, circle sanitary inspectors, vaccination inspecting staff, health assistants and vaccinators, (2) treatment of malaria patients at all hospitals and dispensaries in the district and all kala-azar treatment centres in the interior and out of the way places, anti-malaria and rural health societies, union boards adopting anti-malaria work and voluntary public health societies, (3) special anti-malaria propaganda by distribution of leaflets in hâts, bazars, melas, fairs, lantern lectures and practical anti-mosquito demonstration in villages, examination of school children and short health talks with them on mosquito, malaria and quinine. Dacca—quinine and cinchona were distributed through the 5 anti-malaria societies newly registered and 15 kala-azar centres. Malaria patients were treated in the 25 charitable district board dispensaries. Mymensingh—the epidemic doctors deputed on kala-azar duty treated malaria patients free while quinine was distributed free through the District Board staff. Bakarganj—free distribution of quinine was made to 10,337 malaria patients in the various thanas of the district by the sanitary inspectors, epidemic doctors, kala-azar

doctors, vaccination inspecting staff and other agencies. Four anti-malaria societies, of which one was registered, worked for malaria prevention. Dispensary doctors also treated a number of malaria cases. Malaria was prevalent in many thanas, particularly Lalmohan and Gournadi.

Chittagong—39 lbs. of quinine sulphate tabloids were distributed among the malaria-stricken people through 13 anti-malaria and public health societies; 12 lbs. of quinine sulphate powder and 9 lbs. of tabloids were used by 3 kala-azar doctors in 9 kala-azar centres for the treatment of malaria patients. Noakhali—16 anti-malaria societies were organised and registered and one supervisor appointed to supervise the work of these societies. Tippera—the sanitary staff distributed 229 lbs. of quinine. Eight anti-malaria societies worked in the district. The largest number of deaths occurred in the Brahmanbaria thana.

Kala-azar.

63. **General prevalence.**—10,746 deaths, of which 1,163 were returned by towns and 9,583 by rural areas, occurred in the province in 1928 compared with 11,855 (1,385 in towns and 10,470 in rural areas) in 1927. The death rate was thus reduced by 12·0 per cent. in the province, 17·8 per cent. in towns and 8·4 per cent. in rural areas. Practically half of the deaths in towns occurred in Calcutta alone, which in common with the rest of the province recorded a decrease of 11·1 per cent. compared with the previous year. Forty-two towns did not report any death from kala-azar. Satkhira in Khulna district and Jamalpur in Mymensingh returned death rates of 2·4 and 2·2 per mille respectively. Death rates between 1 and 2 per mille were registered in 5 towns and below 1·0 in the rest. Kala-azar was responsible for 1·4 per cent. of the fever mortality and ·9 per cent. of the total provincial mortality compared with 1·5 and 1·0 respectively in the previous year.

Deaths and death rates from Kala-azar.

Years.	Number of deaths.			
	Bengal Presidency.	All Bengal towns.	Calcutta.	Rural areas.
1927 ..	11,855	1,385	582	10,470
1928 ..	10,746	1,163	514	9,583
Ratio per mille.				
1927 ..	.25	.45	.54	.24
1928 ..	.22	.37	.48	.22

64. **Kala-azar by districts.**—The following statement shows the number of kala-azar admissions to the various treatment centres in the province during the last five years, and is a better index to the incidence of the disease than the crude death rates. It shows that the number of such cases was reduced in every district except Dacca, Hooghly, Dinajpur, Jalpaiguri and Darjeeling,

resulting in a total reduction by 38,104 cases in the province when compared with the previous year.



Kala-azar Statement,

			1924.			1925.		
			Dispensaries.	Special treatment centres.	Total.	Dispensaries.	Special treatment centres.	Total.
24-Parganas .. ..	..	..	8,207	10,117	18,324	13,742	14,208	27,950
Calcutta .. ..	..	..	8,133	..	8,133	11,228	..	11,228
Rajshahi .. ..	..	..	5,130	5,761	10,891	12,679	3,141	15,820
Tippera .. ..	..	..	9,403	4,867	14,270	13,311	6,233	19,544
Dacca .. ..	..	..	4,190	787	4,977	6,921	638	7,559
Nadia .. ..	..	..	3,262	4,944	8,206	4,672	2,924	7,596
Jessore .. ..	..	..	3,845	1,708	5,553	7,016	1,625	8,641
Mymensingh .. ..	..	..	8,690	..	8,690	11,181	5,758	16,939
Bakarganj .. ..	..	..	4,414	1,527	5,941	8,360	5,158	13,518
Faridpur .. ..	..	..	2,346	1,372	3,718	4,924	1,987	6,911
Rangpur .. ..	..	..	1,787	1,519	3,306	4,130	1,094	5,224
Hooghly .. ..	..	..	2,768	4,677	7,445	3,144	1,887	5,031
Khulna .. ..	..	..	1,733	1,861	3,594	5,077	3,373	8,450
Dinaipur .. ..	..	..	1,671	345	2,016	2,676	308	2,984
Pabna .. ..	..	..	568	324	892	970	224	1,194
Malda .. ..	..	..	2,555	3,041	5,596	3,142	1,748	4,890
Burdwan .. ..	..	..	1,451	62	1,513	1,957	76	2,033
Noakhali .. ..	..	..	8,687	4,876	13,563	6,792	2,645	9,437
Howrah .. ..	..	..	635	5,040	5,675	1,184	3,143	4,327
Bogra .. ..	..	..	1,638	2,333	3,971	4,527	370	4,897
Murshidabad .. ..	..	..	1,377	..	1,377	2,178	118	2,296
Jalpaiguri .. ..	..	..	204	..	204	301	24	325
Chittagong .. ..	..	..	336	187	523	721	607	1,328
Midnapur .. ..	..	..	193	..	193	411	29	440
Darjeeling .. ..	..	..	398	..	398	278	..	278
Bankura .. ..	..	..	37	..	37	55	5	60
Birbhum .. ..	..	..	79	..	79	44	..	44
Total .. ..	..	..	83,737	55,348	139,085	131,621	57,323	188,944

65. **Enteric Fever.**—9,297 deaths, composed of 1,330 in towns and 7,967 in rural areas were reported to have occurred in the province in 1928, with death rates of .20, .43 and .18 respectively. The death rates for the province and the rural areas were practically doubled, while in the towns it was raised by 2.4 per cent. Sixty-six out of 117 towns did not report a single death. South Sub-urban returned a rate of 1.2 per mille, 45 others a rate between 1 and .1 per mille and the remaining 5 below .1 per mille. Enteric fever accounted for 1.2 per cent. of the fever mortality and .7 per cent. of the total provincial mortality against .6 and .4 per cent. in 1927.

Deaths and death rates from Enteric Fever.

Years.	Number of deaths.			
	Province.	All towns.	Calcutta.	Rural areas.
1927 ..	5,077	1,293	857	3,784
1928 ..	9,297	1,330	866	7,967
Death rates per mille.				
1927 ..	0.11	0.42	0.79	0.09
1928 ..	0.20	0.43	0.80	0.18

66. **Measles.**—Deaths from measles exceeded those in the previous year by

459 in the province. This excess was made up of 152 in the towns and 307 in the rural areas. Calcutta deaths were 141 in excess of those in 1927. Six towns returned death rates below .1 per mille and 25 between 1 and .1 per mille. No deaths were reported from the remaining 86 towns. The highest death rate .7 per mille was registered in Vishnupur. Measles was responsible for .25 of the fever mortality and .16 per cent. of the total mortality from all causes, compared with .18 and .12 in 1927.

Deaths and death rates per mille from Measles.

years.	Number of deaths.			
	Province.	All towns.	Calcutta.	Rural areas.
1927	1,425	219	136	1,206
1928	1,884	371	277	1,513
Death rates per mille.				
1927 .. ..	.03	.07	.13	.03
1928 .. ..	.04	.1	.3	.03

67. **Relapsing Fever.**—Of the 3,859 deaths from relapsing fever, 54 occurred in towns and 3,805 in rural areas. There was thus an increase of 33.3 per cent. in the province and 36.5 per cent. in the rural areas, although the town deaths were reduced by about 50 per cent. No death was reported from Calcutta. Only

1924-28.

1926.			1927.			1928.		
Dispen- saries.	Special treatment centres.	Total.	Dispensaries.	Special treatment centres.	Total.	Dispensaries.	Special treatment centres.	Total.
10,564	14,145	24,709	7,969	17,615	25,584	4,693	16,096	20,789
9,947	..	9,947	13,278	..	13,278	12,218	..	12,218
16,608	1,468	18,076	7,694	11,307	19,001	5,941	6,098	12,039
7,068	2,511	9,579	5,067	3,667	8,734	4,353	3,957	8,310
7,634	1,387	9,021	6,649	968	7,617	6,318	1,782	8,100
4,244	1,409	5,653	7,215	1,600	8,815	5,410	2,665	8,075
4,835	1,745	6,580	3,779	13,962	17,741	4,033	2,975	7,008
6,787	2,987	9,774	5,034	2,418	7,452	4,091	2,499	6,590
7,478	5,381	12,859	4,796	4,497	9,293	4,056	2,400	6,456
4,400	1,896	6,296	3,250	3,167	6,418	3,028	3,035	6,063
3,225	2,160	5,385	2,581	4,003	6,584	2,502	3,140	5,642
3,057	839	3,896	2,523	1,865	4,388	2,401	3,131	5,532
4,596	4,808	9,404	2,837	5,024	6,861	2,355	2,548	4,903
2,891	155	3,046	2,917	394	3,311	2,925	1,568	4,493
1,110	1,871	2,981	1,137	2,589	3,726	1,982	1,517	3,499
2,592	1,712	4,304	2,728	2,391	5,119	2,069	1,271	3,340
1,877	417	2,294	1,610	1,624	3,234	1,224	1,854	3,078
3,536	2,738	6,274	2,107	2,857	4,964	1,777	1,235	3,012
1,600	958	2,558	1,541	2,091	3,632	1,180	1,558	2,738
3,401	1,467	4,868	1,675	1,405	3,080	1,431	910	2,341
3,088	633	3,721	1,464	1,412	2,876	1,371	692	2,063
448	385	833	420	398	818	602	1,390	1,992
686	1,068	1,754	591	1,838	2,429	563	1,015	1,578
338	100	438	349	2,367	2,716	684	769	1,453
247	..	247	308	..	308	571	..	571
35	130	165	50	1,998	2,048	28	18	46
34	..	34	47	..	47	41	..	41
112,326	52,370	164,696	89,617	90,457	180,074	77,847	64,123	141,970

20 towns registered deaths from relapsing fever, of which 4 Tollyganj, Kamarhati, Rangpur and Chittagong recorded rates below .1 per mille and the others above that. .51 per cent. of the fever deaths and .32 per cent. of the total mortality in the province was accounted for by relapsing fever, as against .37 and .24 per cent. in the previous year.

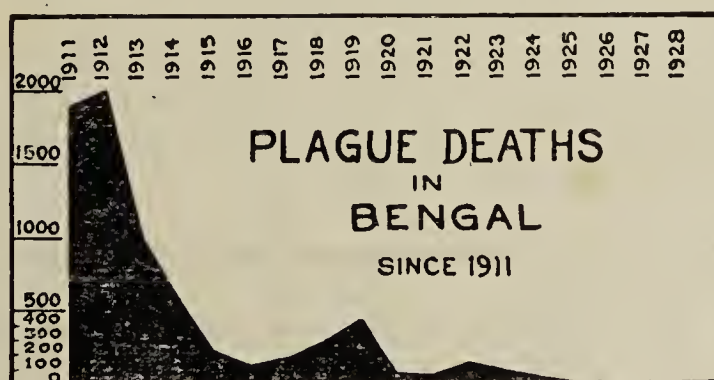
Deaths and death rates from Relapsing Fever.

Years.	Number of deaths.			
	Province.	All towns.	Calcutta.	Rural areas.
1927 ..	2,894	106	..	2,788
1928 ..	3,859	54	..	3,805
Death rates per mille.				
1927 ..	.06	.03	..	.06
1928 ..	.08	.02	..	.09

68. **Other Fevers.**—357,526 deaths (9,449 in towns and 348,077 in rural areas) were returned as due to other fevers compared with 338,612 (9,651 towns and 328,961 rural areas) in 1927. This showed an increase of 18,914 in such deaths in the province and 19,116 in rural areas, but a decrease of 202 in the towns. 47.5 per cent. of the fever mortality and 30.07 per cent. of the total were due to this cause.

69. **Plague.**—Four deaths from plague were reported from Calcutta, one

each from the Burdwan and the Rangpur districts during the year under report against one death in Calcutta in the previous year. Both the Rangpur and Burdwan cases were imported, the former from Punjab and the latter from the United Provinces. Owing to immediate preventive measures taken, no other case occurred in the infected houses or in the neighbourhood. Of the Calcutta cases, 3 were imported and in the case of the fourth, the source was unknown. All these four cases were of bubonic type. One case occurred in January, 2 each in March and April and one again in September.



Dysentery and Diarrhoea.

70. **General Prevalence.**—The total number of deaths from this cause increased by 4,061 and the death rate by 14.3 per cent. and 33.3 per cent. respectively when compared with that of the previous year and the preceding decennium. The dysentery rate was .39 and

the diarrhoea rate .32 per mille as against .37 and .26 in the previous year, the former showing an excess of 5.4 per cent. and the latter of 23.1 per cent. 2.81 per cent. of total deaths in the province were caused by dysentery and diarrhoea against 2.47 in the previous year.

Deaths.	1927.	1928.
Deaths	29,358	33,419
Death rate per mille .. ..	.63	.72
Percentage of dysentery and diarrhoea deaths to total mortality	2.47	2.81

71. **Seasonal Incidence.**—The maximum was attained in December and January and the minimum in June. Generally speaking the death rate with varying fluctuations continued rising up to the end of the year. With the exception of October, November and December it exceeded the previous year's rate in every month.

72. **Dysentery and Diarrhoea by Divisions.**—The crude death rates followed their usual order of sequence, the highest rate being recorded in the Burdwan Division and the lowest in the Rajshahi, the other Divisions retaining their proper places on the list. The death rates were in excess of those in the previous year except in Presidency and the decennium in every Division. One death out of every 22 in Burdwan, 1 in 36 in Presidency, 1 in 85 in Rajshahi, 1 in 31 in Dacca and 1 in 30 in Chittagong was due to this cause, noticeable increases in this respect occurring in Rajshahi, Dacca and Chittagong Divisions where the proportion was 1 in 116, 1 in 38 and 1 in 42 respectively in the previous year. Again 29.71 per cent. of the total dysentery and diarrhoea deaths occurred in Dacca followed by 28.45 in Burdwan. Rajshahi and Chittagong returned the lowest percentages. Looked at from this point of view, Burdwan and Presidency Divisions seem to have improved while the other three deteriorated during the last ten years.

From the following table it will be observed that the death rates from dysentery were higher than those from diarrhoea in every Division except Burdwan as in the previous year.

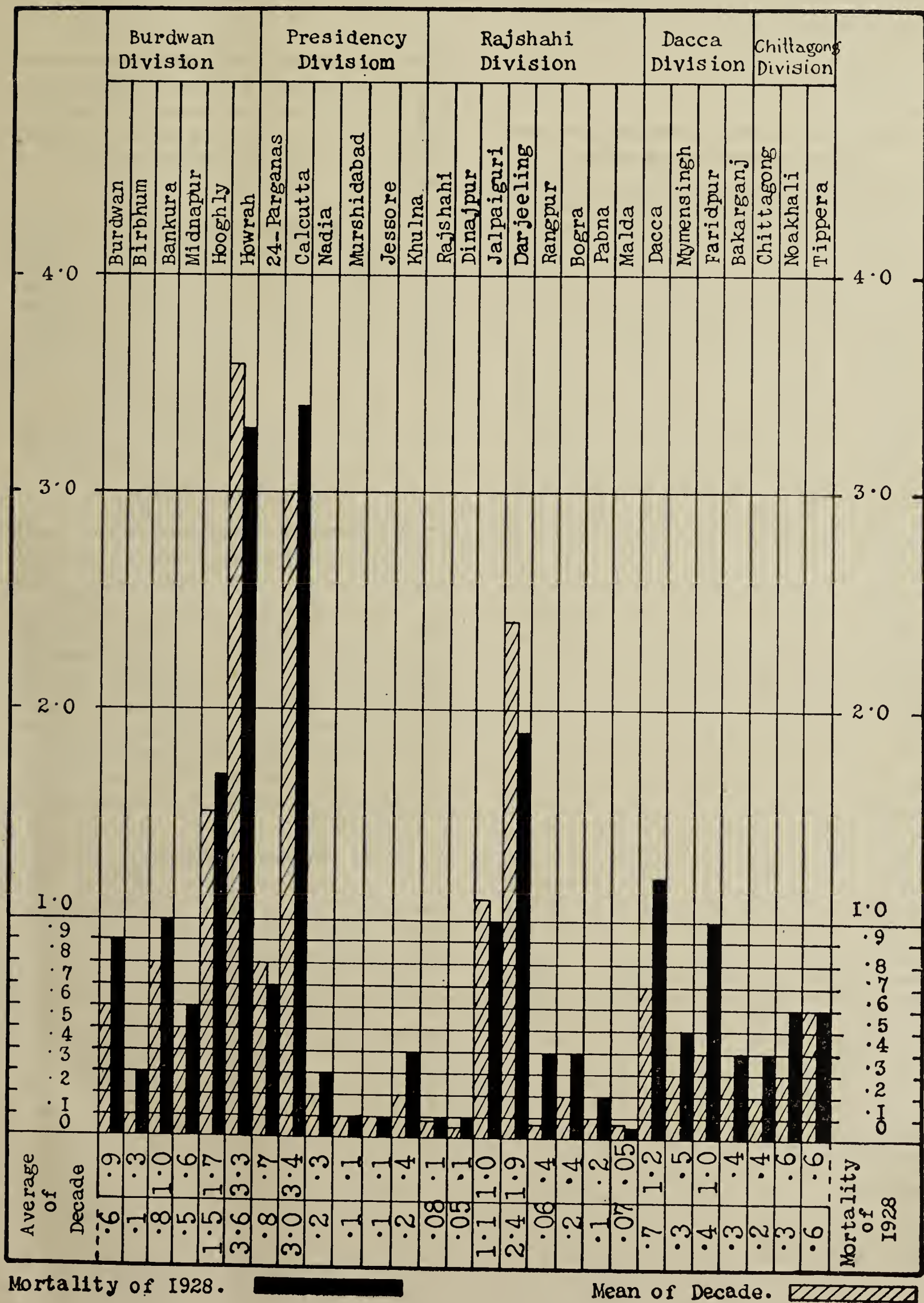
Divisions.	Death rates per mile.	
	Dysentery-	Diarrhoea.
Burdwan .. ..	.43	.75
Presidency .. ..	.40	.34
Rajshahi .. ..	.19	.15
Dacca .. ..	.54	.23
Chittagong .. ..	.39	.20

73. **Dysentery and diarrhoea by districts.**—The death rates from this cause which had been the highest in Howrah and Calcutta during the previous decennium and in 1927 were reduced in both these districts when compared with the previous year, and in Howrah as against the decennial average, but Calcutta rate exceeded the latter in 1928. There was a reduction in the case of Darjeeling and an increase in Hooghly another set of two districts which showed high death rates during these two periods. With the exception of Jalpaiguri, Murshidabad and Malda, the death rates were increased in every one of the remaining districts when compared with the previous decennium.

Dysentery and diarrhoea death rates per mille.					
Districts.	Average of decade.	1928.	Increase + or decrease -.	1927.	Increase + or decrease -.
Howrah ..	3.59	3.34	— .25	3.90	— .56
Calcutta ..	3.02	3.36	+ .34	3.57	— .21
Darjeeling ..	2.41	1.92	— .49	1.94	— .02
Hooghly ..	1.54	1.67	+ .13	1.25	+ .42
Jalpaiguri ..	1.13	.98	— .15	.85	+ .13
Bankura ..	.82	1.10	+ .28	.98	+ .12
24-Parganas ..	.76	.80	+ .04	.80	± 0
Dacca ..	.72	1.27	+ .55	.75	+ .52
Burdwan ..	.64	.95	+ .31	.78	+ .17
Tippera ..	.58	.64	+ .06	.65	— .01
Midnapur ..	.55	.60	+ .05	.51	+ .09
Faridpur ..	.36	1.06	+ .70	.78	+ .28
Mymensingh ..	.32	.59	+ .20	.50	+ .02
Bakarganj ..	.31	.39	+ .08	.42	— .03
Noakhali ..	.29	.66	+ .37	.37	+ .29
Chittagong ..	.25	.43	+ .18	.41	+ .02
Nadia ..	.22	.34	+ .12	.38	— .04
Bogra ..	.22	.39	+ .17	.35	+ .04
Khulna ..	.20	.40	+ .20	.39	+ .01
Murshidabad ..	.15	.12	— .03	.12	± 0
Birbhum ..	.12	.32	+ .20	.08	+ .24
Jessore ..	.10	.12	+ 2.0	.17	— .05
Pabna ..	.10	.17	+ .07	.13	+ .04
Rajshahi ..	.08	.09	+ .01	.07	+ .02
Malda ..	.07	.06	— .01	.10	— .04
Rangpur ..	.06	.41	+ .35	.10	+ .31
Dinajpur ..	.05	.08	+ .03	.07	+ .01

Divisions.	Death rate per mille.			Proportion of total mortality due to dysentery and diarrhoea.			Percentage of total provincial mortality.		
	Average, 1918-27.	1927.	1928.	Average, 1918-27.	1927.	1928.	Average, 1918-27.	1927.	1928.
Burdwan	1.07	1.09	1.18	3.39	4.23	4.65	34.20	29.97	28.45
Presidency .. ..	.64	.78	.74	2.09	2.72	2.77	24.39	25.24	21.11
Rajshahi .. ..	.25	.24	.34	.78	.86	1.18	10.21	8.45	10.44
Dacca .. ..	.42	.60	.77	1.69	2.60	3.27	21.60	26.15	29.71
Chittagong .. ..	.41	.51	.59	1.75	2.39	2.62	9.60	10.19	10.28

Graph Showing the Relative Intensity of Dysentery and Diarrhoea Mortality
in each district of Bengal Presidency during the year 1928 and the
Average of Decade 1918—27.



A comparison of the dysentery with diarrhoea death rates shows that while the dysentery rates were the highest in Calcutta, Howrah and Darjeeling the last two districts held the same position with regard to diarrhoea. The rates for both these diseases were reduced when compared with the previous year in Calcutta, Howrah, Nadia, Jessore and Malda, and increased in 9 others. The rest showed either an increase or decrease in one of their rates.

Dysentery and diarrhoea death rates per mille shown separately for each district.

Districts.	Dysentery.			Diarrhoea.		
	1927.	1928.	Increase + or decrease —.	1927.	1928.	Increase + or decrease —.
Calcutta ..	1·76	1·67	—·09	1·81	1·69	—·12
Darjeeling ..	1·36	1·33	—·03	·58	·59	+·01
Howrah ..	1·32	1·11	—·21	2·58	2·23	—·35
Dacca ..	·62	·93	+·31	·13	·34	+·21
Faridpur ..	·57	·65	+·08	·21	·42	+·21
Hooghly ..	·52	·49	—·03	·73	1·17	+·44
24-Parganas ..	·47	·45	—·02	·33	·35	+·02
Tippera ..	·46	·44	—·02	·19	·20	+·01
Jalpaiguri ..	·40	·42	+·02	·45	·57	+·12
Mymensingh ..	·37	·36	—·01	·13	·15	+·02
Bankura ..	·36	·34	—·02	·63	·75	+·12
Bakarganj ..	·35	·33	—·02	·07	·07	± 0
Burdwan ..	·33	·33	± 0	·45	·62	+·17
Chittagong ..	·29	·28	—·01	·12	·15	+·03
Midnapur ..	·28	·32	+·04	·23	·28	+·05
Noakhali ..	·27	·40	+·13	·10	·25	+·15
Khulna ..	·24	·23	—·01	·16	·17	+·01
Nadia ..	·23	·21	—·02	·16	·13	—·03
Bogra ..	·17	·19	+·02	·17	·20	+·03
Jessore ..	·09	·08	—·01	·07	·04	—·03
Murshidabad ..	·08	·09	+·01	·04	·04	± 0
Rangpur ..	·08	·25	+·17	·03	·16	+·13
Pabna ..	·06	·10	+·04	·06	·06	± 0
Malda ..	·06	·03	—·03	·04	·02	—·02
Rajshahi ..	·04	·06	+·02	·02	·03	+·01
Birbhum ..	·04	·19	+·15	·04	·13	+·09
Dinajpur ..	·04	·04	± 0	·02	·04	+·02

74. **Dysentery and diarrhoea in towns and rural areas.**—8,682 deaths with a death rate of 2·79 occurred in towns and 24,737 deaths with a rate of ·57 per mille in rural areas showing a decrease of 7·6 per cent. in towns and an excess of 23·9 per cent. in rural areas. 41·8 per cent. of the death from these causes returned by all towns occurred in Calcutta alone. The highest death rate 5·8 per mille was recorded in Baranagar and the lowest ·1 each in Asansol, Suri and Dhulian. No deaths occurred from dysentery in 4 and from diarrhoea in 11 others. Rates above 1·0 per mille were returned for dysentery from 46 towns and for diarrhoea from 35, all the rest registering rates of 1·0 per mille or below it.

Dysentery and diarrhoea.

Years.	Number of deaths.		
	All towns.	Calcutta.	Rural areas.
1927	9,372	3,845	19,986
1928	8,682	3,627	24,737
Death rates per mille.			
1927	3·02	3·57	·46
1928	2·79	3·37	·57

Respiratory Diseases.

75. **General Prevalence.**—The death rate from respiratory diseases was in excess of 28·1 per cent. over that in the previous year and of 56·9 per cent. over the decennial average. Pneumonia death rate increased by 37·9 per cent. and influenza and phthisis by 25·0 per cent. each, the increase from other respiratory diseases amounting to 23·8 per cent. 3·55 per cent. of the total mortality was due to respiratory diseases as compared with 2·77 in 1927.

Respiratory diseases.

	1927.	1928.
Deaths	32,911	42,242
Death rates	·71	·91
Percentage of deaths from respiratory diseases to total mortality	2·77	3·55

Diseases.	Number.		Percentage of increase + or decrease —.	Death rates for mille.		Percentage of total deaths from respiratory diseases.	
	1927.	1928.		1927.	1928.	1927.	1928.
Influenza	1,836	2,242	+ 22·1	·04	·05	5·58	5·31
Pneumonia	13,718	18,557	+ 35·3	·29	·40	41·67	43·93
Phthisis	7,689	9,166	+ 19·2	·16	·20	23·36	21·70
Other respiratory diseases ..	9,668	12,277	+ 27·0	·21	·26	29·38	29·06

76. Seasonal mortality.—The death rate in 1928 from respiratory diseases exceeded both the decennial average and the previous year's rate in every month of 1928. Compared with the previous year this increase varied from 13·8 per cent. in November to 40·5 per cent. in June. The lowest number of deaths occurred in June after which it rose to reach its maximum towards the close of the year.

Seasonal Mortality from Respiratory Diseases.

Months.	Average, 1918-27.	1927.	1928.	Percentage of difference between 1927 and 1928.
January ..	2,707	2,923	3,972	+35·9
February ..	2,518	2,736	3,471	+26·8
March ..	2,835	3,259	4,106	+26·0
April ..	2,233	2,532	3,536	+39·6
May ..	1,943	2,372	3,262	+37·5
June ..	1,610	2,076	2,917	+40·5
July ..	1,752	2,250	2,947	+30·9
August ..	1,840	2,321	2,999	+29·2
September ..	1,808	2,263	3,011	+33·0
October ..	2,173	2,761	3,469	+25·6
November ..	2,603	3,533	4,022	+13·8
December ..	2,828	3,885	4,530	16·6

77. Respiratory Diseases by Divisions.—Burdwan and Presidency Divisions recorded death rates of 1·7 and 1·8 per mille respectively and the rest below 1·0 per mille. Compared with the previous year and the preceding decennium, the death rates increased in every Division except in Chittagong where they remained the same as in the previous year. The proportion of total Divisional deaths due to respiratory diseases was also increased in every Division. About one-third of the total respiratory deaths occurred in Burdwan and two-fifths in Presidency, the remaining four-fifteenths occurring in the other 3 Divisions combined. This proportion was in excess of that of the decennium and the previous year in Burdwan and Dacca Divisions but reduced in Presidency and Rajshahi. In Chittagong, however, it showed an increase when compared with the decennial percentage and a reduction against previous year.

78. Respiratory diseases by districts.

—Calcutta stood highest with a death rate of 9·9 per mille followed by Howrah (3·9) and Hooghly (2·4). Seven others registered death rates between 1·0 and 2·0 per mille and the remaining below 1·0 per mille. Compared with the previous decennium the death rates increased in all the districts but 2 (Murshidabad and Darjeeling) and remained unchanged in 4 others. As against the previous year, they were reduced in 3, continued the same in 10, but were increased in the remaining 14 districts.

Death rates from Respiratory Diseases per mille.

Districts.	Average of decade.	1928.	Increase +or decrease —.	1927.	Increase +or decrease —.
Calcutta ..	8·8	9·9	+1·1	9·7	+·2
Howrah ..	2·8	3·9	+1·1	3·5	+·4
Darjeeling ..	2·1	1·9	—·2	2·0	—·1
Hooghly ..	1·1	2·4	+1·3	1·1	+1·3
24 Parganas ..	1·0	1·2	+·2	1·0	+·2
Jalpaiguri ..	·9	1·3	+·4	1·3	± 0
Bankura ..	·8	1·8	+1·0	1·0	+·8
Burdwan ..	·7	1·8	+1·1	1·3	+·5
Nadia ..	·5	1·0	+·5	1·0	± 0
Midnapur ..	·5	·8	+·3	·6	+·2
Bogra ..	·3	·4	+·1	·4	± 0
Murshidabad ..	·3	·2	—·1	·2	± 0
Dacca ..	·3	·8	+·5	·3	+·5
Tippura ..	·2	·3	+·1	·4	—·1
Jessore ..	·2	2	± 0	·3	— 1
Birbhum ..	·2	·9	+·7	·1	+·8
Khulna ..	·2	·6	+·4	·5	+ 1
Mymensingh ..	·2	·2	± 0	·2	± 0
Faridpur ..	·1	1·1	+1·0	·5	+·6
Chittagong ..	·1	·2	+·1	·2	± 0
Dinaipur ..	·1	·2	+·1	·2	± 0
Malda ..	·1	·1	..	·1	± 0
Bakarganj ..	·1	·1	± 0	·1	± 0
Pabna ..	·1	·2	+·1	·1	+·1
Rajshahi ..	·08	·1	+·02	·1	± 0
Rangpur ..	·05	3	+ 25	·05	+·25
Noakhali ..	·03	·1	+·07	·04	+·06

Divisions.	Deaths from respiratory diseases per mille.			Proportion of total deaths due to respiratory dis- eases.			Percentage of provincial mortality from respira- tory diseases.		
	Ten years.	1927.	1928.	Ten years.	1927.	1928.	Ten years.	1927.	1928.
Burdwan ..	0·9	1·1	1·7	2·9	4·4	6·8	27·4	28·1	33·0
Presidency ..	1·5	1·6	1·8	4·7	5·7	6·6	51·8	47·7	39·6
Rajshahi ..	0·2	0·3	0·4	0·8	1·1	1·3	9·4	9·5	9·1
Dacca ..	0·2	0·3	0·5	0·7	1·2	2·1	8·2	10·4	14·9
Chittagong ..	0·1	0·2	0·2	0·6	1·1	1·1	3·3	4·3	3·4

79. **Respiratory diseases in towns and rural areas.**—The death rate from respiratory diseases increased by 3·8 in all towns, 2·0 in Calcutta and 50·0 per cent. in rural areas. The urban rate was nine times higher than the rural rate. The highest death rate 10·4 per mille was returned from Ramjibanpur, and the lowest ·2 from Titagarh. Twenty-two towns returned rates below 1·0 per mille and the others above that.

Deaths and death rates from Respiratory Diseases.

Years.			Number of deaths.		
			All towns.	Calcutta.	Rural areas.
1927	..	..	16,555	10,465	16,356
1928	..	..	17,112	10,633	25,130
			Death-rates per mille.		
1927	..	..	5·3	9·7	·4
1928	..	..	5·5	9·9	·6

Influenza.

80. **General Prevalence.**—The number of deaths increased by 406 in the province and 432 in the rural areas but was reduced by 26 in all towns, the percentages of increase in the death rate being 25·0 and 33·3 and the reduction 5·0 respectively. Compared with 1918 the great influenza year, the number of deaths show a decrease of 89·3 per cent. No death was reported from 75 out of 117 towns. Ramjibanpur returned the highest death rate—1·5 per mille; 36 towns registered rates between 1·0 and ·1 per mille and 5 others below ·1 per mille. 5·3 per cent. of the deaths due to respiratory diseases and 1·9 per cent. of the total mortality were due to influenza.

Deaths and death rates from Influenza.

Years.			Number of deaths.			
			Province.	All towns.	Calcutta.	Rural areas.
1918	..	..	20,901	..	..	..
1927	..	..	1,836	624	495	1,212
1928	..	..	2,242	598	481	1,644
			Death rates per mille.			
1927	..	..	·04	·20	·46	·03
1928	..	..	·05	·19	·45	·04

81. **Influenza by Divisions.**—Burdwan and Presidency Divisions had the highest death rate in 1928, but the greatest increase compared with the previous year occurred in Dacca followed by Burdwan. One in ten deaths due to

respiratory diseases in Rajshahi was accounted for by influenza, and one in 23 in Presidency; this proportion varied between these two extremes in other Divisions. While highest in Rajshahi in 1928 it was actually much reduced there compared with the previous year and such also was the case in Dacca and Chittagong Divisions unlike the remaining two where it showed an excess. About one-third of the total influenza deaths occurred in Presidency Division alone while in Chittagong the proportion was 1 in 20.

Influenza by Divisions.

Divisions.		Influenza deaths per mille of population.		Proportion of total mortality from respiratory diseases due to influenza.		Percentage of provincial Influenza mortality.	
		1927.	1928.	1927.	1928.	1927.	1928.
Burdwan	..	·04	·08	4·0	4·7	20·0	29·5
Presidency	..	·07	·76	4·5	4·3	38·1	32·2
Rajshahi	..	·05	·04	15·9	10·0	27·1	17·2
Dacca	..	·007	·03	2·6	5·5	4·8	15·5
Chittagong	..	·03	·02	12·9	8·7	9·9	5·6

82. **Influenza by districts.**—Calcutta with its ·44 per mille deaths topped the list. Five districts returned death rates between ·2 and ·1 per mille, 16 between ·1 and ·01 and 4 below ·01 per mille, Malda alone not registering a single death from this cause. Compared with the previous year influenza appears to have increased in 15 districts and decreased in 8, while the death rates showed no change in the remaining 4 districts.

Death rates from Influenza per mille.

Districts.		1927.	1928.	Increase + or decrease —.
Calcutta	..	·46	·44	— ·2
Jalpaiguri	..	·26	·19	— ·07
Bogra	..	·16	·09	— ·07
Darjeeling	..	·14	·17	+ ·03
Howrah	..	·09	·18	+ ·09
Burdwan	..	·08	·09	+ ·01
Nadia	..	·07	·08	+ ·01
Tippera	..	·05	·04	— ·01
Hooghly	..	·04	·10	+ ·06
Midnapur	..	·03	·03	± 0
Bankura	..	·03	·12	+ ·09
24-Parganas	..	·02	·04	+ ·02
Khulna	..	·02	·01	— ·01
Dacca	..	·01	·06	+ ·05
Chittagong	..	·01	·01	± 0
Jessore	..	·01	·005	— ·005
Rajshahi	..	·01	·003	— ·007
Dinajpur	..	·01	·01	± 0
Pabna	..	·01	·01	± 0
Faridpur	..	·008	·04	+ ·082
Rangpur	..	·005	·01	+ ·005
Malda	..	·005	..	— ·005
Bakarganj	..	·004	·02	+ ·106
Birbhum	..	·004	·04	+ ·036
Mymensingh	..	·003	·01	+ ·007
Murshidabad	..	·001	·004	+ ·008
Noakhali	..	·001	·003	+ ·002

Pneumonia.

83. **General Prevalence.**—The death rate from this cause has been steadily going up year after year so that within the last 8 years it has increased by 60·0 per cent. in the province, 29·9 per cent. in all towns, 15·7 per cent. in Calcutta and 92·3 per cent. in rural areas. Only 6 towns did not report any death from pneumonia. Khirpai had the highest death rate 8·0 per mille and Gobardanga 6·3. Forty-nine towns returned rates below ·1 per mille, Titagarh registering the lowest death rate ·04. The remaining towns had rates varying between these. Pneumonia was responsible for 43·9 per cent. of deaths due to respiratory diseases and 1·6 per cent. of the total deaths, compared with 41·7 and 1·1 per cent. respectively in 1927.

Pneumonia.

Years.	Number of deaths.			
	Province.	All towns.	Calcutta.	Rural areas.
1921	11,567	5,806	3,183	5,761
1922	10,615	5,255	2,722	5,360
1923	10,767	5,470	2,863	5,297
1924	11,490	6,538	3,896	4,952
1925	11,259	6,611	3,830	4,648
1926	12,294	7,246	4,304	5,048
1927	13,718	7,139	4,161	6,579
1928	18,557	7,560	4,370	10,997
Death rates per mille.				
1921	·25	1·87	3·50	·13
1922	·23	1·70	3·00	·12
1923	·23	1·76	3·15	·12
1924	·25	2·11	3·61	·11
1925	·24	2·13	3·55	·11
1926	·26	2·33	3·99	·12
1927	·29	2·30	3·86	·15
1928	·40	2·43	4·05	·25

84. **Pneumonia by Divisions.**—As in the previous year Burdwan and Presidency Divisions had the highest death rates. It was in excess of the previous year's rate in all the Divisions except Chittagong. Pneumonia was responsible for a little more than half of the deaths due to respiratory diseases in Burdwan, four-ninths in Presidency, two-fifths in Rajshahi, one-third in Dacca and one-fifth in Chittagong. Compared with the previous year, this proportion increased in all the Divisions. Again about two-fifths of the total pneumonia deaths occurred in each of the 2 Divisions, Burdwan and Presidency, while the remaining one-fifth in the other 3 Divisions combined.

Pneumonia.

Divisions.	Pneumonia deaths per mile of population.		Proportion of total mortality from respiratory diseases due to pneumonia.		Percentage of provincial pneumonia mortality.	
	1927.	1928.	1927.	1928.	1927.	1928.
Burdwan	·56	·91	48·9	52·4	33·0	39·4
Presidency	·71	·78	42·9	44·2	49·1	39·8
Rajshahi	·11	·15	36·5	40·4	8·3	8·4
Dacca	·08	·15	30·1	31·7	7·5	10·8
Chittagong	·05	·05	20·4	21·1	2·1	1·6

85. **Pneumonia by districts.**—Calcutta had the highest death rate 4·05 per mille from pneumonia followed by Hooghly 1·54, Howrah 1·53 and Burdwan 1·16. Thirteen districts returned rates between ·1 and 1·0 per mille and the rest below ·1 per mille. Noakhali stood at the bottom of the list with a rate of ·003 per mille. Compared with the previous year all the districts appear to show an increased mortality from this cause except 7, in 2 of which —Malda and Bogra, the rates remained the same in both the years.

Death rates from Pneumonia per mille.

Districts.	1927.	1928.	Increase + or decrease —.
Calcutta	3·86	4·05	+·19
Howrah	1·45	1·53	+·08
Burdwan	·76	1·16	+·40
Hooghly	·62	1·54	+·92
Jalpaiguri	·62	·63	+·01
Nadia	·52	·51	—·01
Darjeeling ...	·51	·74	+·23
24-Parganas ..	·48	·65	+·17
Bankura	·45	·83	+·38
Midnapur	·31	·53	+·22
Khulna	·23	·22	—·01
Faridpur	·20	·41	+·21
Chittagong	·12	·09	—·03
Dacca	·11	·22	+·11
Dinajpur	·09	·07	—·02
Bogra	·09	·09	± 0
Murshidabad ..	·09	·12	+·03
Jessore	·09	·10	+·01
Malda	·04	·04	± 0
Birbhum	·04	·24	+·20
Rajshahi	·04	·05	+·01
Mymensingh ..	·03	·04	+·01
Tippura	·03	·06	+·03
Bakarganj	·02	·06	+·04
Pabna	·02	·07	+·05
Rangpur	·01	·12	+·11
Noakhali	·004	·003	—·001

Phthisis.

86. **General Prevalence.**—Like pneumonia, phthisis also has been gradually increasing, and within the last 8 years, the increase appears to be 150 per cent. in the province, 36·1 in all towns, 4·3 in Calcutta, and 333·3 in rural areas. The urban rate in 1928 was nine times and the Calcutta rate about 19 times that in the rural areas. No death was reported from 18 towns. Twelve towns returned death rates of 1·0 per mille and above, the highest being 2·8 per mille each in Darjeeling and Kurseong. The remaining 87 registered rates below 1·0 per mille, ·05 each being recorded in Rangpur and Kishorganj and ·04 in Madaripur. 21·7 per cent. of the deaths due to respiratory diseases and ·7 of the total mortality were due to phthisis against 23·3 and ·6 per cent. in the previous year.

Phthisis.

Years.	Number of deaths			
	Province.	All towns.	Calcutta.	Rural areas.
1921	4,055	2,661	2,095	1,394
1922	4,477	2,981	2,106	1,496
1923	4,942	2,863	1,967	2,079
1924	5,577	3,251	2,413	2,326
1925	6,079	3,277	2,460	2,802
1926	7,032	3,650	2,640	3,382
1927	7,689	3,698	2,725	3,991
1928	9,166	3,646	2,600	5,520
Death rates per mille.				
1921	·08	·86	2·31	·03
1922	·09	·96	2·32	·03
1923	·10	·92	2·17	·04
1924	·12	1·05	2·24	·05
1925	·13	1·06	2·28	·06
1926	·15	1·18	2·45	·08
1927	·16	1·19	2·53	·09
1928	·20	1·17	2·41	·13

87. **Phthisis by Divisions.**—Presidency Division had the highest death rate while Burdwan stood second on the list. Chittagong had the lowest death rate. Compared with the previous year the death rates increased in all the Divisions except Chittagong. The proportion of total mortality from respiratory diseases due to phthisis in the various Divisions are shown in the following table. Again 42·6 per cent. of the total

provincial phthisis mortality occurred in Presidency Division followed by 27·4 per cent. in Burdwan, while the lowest percentage of phthisis deaths was recorded in Chittagong. Compared with the previous year this percentage increased in Burdwan, Dacca and Rajshahi Divisions while it was reduced in the other two.

Phthisis.

Divisions.	Phthisis deaths per mille of population.		Proportion of total mortality from respiratory diseases due to phthisis.		Percentage of provincial phthisis mortality.	
	1927.	1928.	1927.	1928.	1927.	1928.
Burdwan	·23	·31	20·1	18·0	24·1	27·4
Presidency	·40	·41	24·4	23·3	49·8	42·6
Rajshahi	·08	·10	25·5	26·5	10·4	11·1
Dacca	·07	·11	24·9	22·6	11·1	15·5
Chittagong	·06	·05	24·6	21·7	4·5	3·4

88. **Phthisis by districts.**—Calcutta again headed the list with a death rate of 2·41 per mille. Fourteen other districts returned rates below 1·0 per mille and the remaining 12 below ·1 per mille. Compared with the previous year, Calcutta, Howrah, Tippera, Dinajpur and Rajshahi improved, while the progress was stationary in Jessore, Bakarganj and Malda; the remaining districts, however, showed increase in their rates.



Death rates from Phthisis per mille.

Districts.	1927.	1928.	Increase + or decrease —.
Calcutta	2·53	2·41	—·12
Howrah	·77	·73	—·04
Darjeeling	·60	·69	+·03
Jalpaiguri	·31	·37	+·06
Hooghly	·24	·41	+·17
Burdwan	·21	·29	+·08
24-Parganas	·20	·24	+·04
Bankura	·20	·37	+·17
Nadia	·16	·20	+·04
Tippera	·11	·09	—·02
Midnapur	·11	·14	+·03
Khulna	·11	·15	+·04
Dacca	·09	·16	+·07
Bogra	·08	·10	+·02
Jessore	·08	·08	±0
Faridpur	·08	·16	+·08
Mymensingh	·06	·09	+·03
Bakarganj	·04	·04	±0
Birbhum	·04	·19	+·15
Dinajpur	·04	·02	—·02
Murshidabad	·03	·04	+·01
Rajshahi	·03	·02	—·01
Pabna	·03	·06	+·03
Chittagong	·02	·03	+·01
Malda	·02	·02	±0
Rangpur	·02	·07	+·05
Noakhali	·003	·01	+·007

89. **Other Respiratory diseases.**—Other respiratory diseases claimed 5,308 victims in towns and 6,969 in rural areas making a total of 12,277 in the province with death rates of 1·7, ·2 and ·3 per mille respectively against 5,094, 4,574 and 9,668 with rates of 1·6, ·1 and ·2 per mille respectively in the previous year, showing an increase of 4·2 per cent. in towns, 52·4 in rural areas and 26·9 in the province. Calcutta returned 3,182 deaths with a death rate of 2·9 against 3,084 deaths and 2·9 as the death rate in 1927.

Injuries.

90. **General Prevalence.**—The number of deaths from injuries exceeded that in the previous year by 943 and the death rate by 4·8 per cent. Suicides increased by 19, deaths from wounds and accidents by 793, from snake-bites and attacks of wild animals by 40 and from rabies by 91. 1·7 per cent. of the total provincial mortality were due to injuries, against 1·6 per cent. in 1927.

1927. 1928.

Deaths from injuries—

Suicides	3,171	3,190
Wounds and accidents	11,310	12,103
Snake-bites and attacks of wild animals	4,502	4,542
Rabies	376	467
Total	19,359	20,302

Death rates per mille—

Suicides	·07	·07
Wounds and accidents	·24	·26
Snake-bites and attacks of wild animals	·10	·10
Rabies	·008	·01
Total	·42	·44

91. **Deaths due to injuries in towns and rural areas.**—About 92 per cent. of such deaths occurred in rural areas and 8 per cent. in towns. Calcutta accounted for a little less than half the total deaths in all towns. As usual, the majority of these deaths both in towns and rural areas were caused by wounds and accidents and the minimum from rabies.

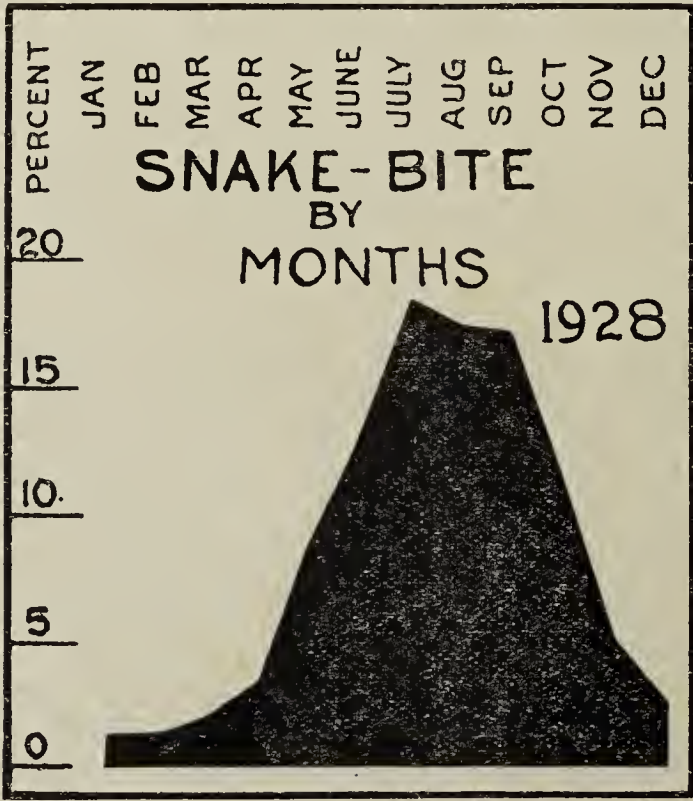
Causes.	Deaths.			Death rates per mille.		
	All towns.	Calcutta.	Rural areas.	All towns.	Calcutta.	Rural areas.
Suicides	175	25	3,015	·06	·02	·07
Wounds and accidents	1,306	648	10,797	·42	·60	·25
Snake-bites and attacks from wild animals	114	..	4,428	·04	..	·10
Rabies	41	21	426	·01	·02	·01
Total—1928	1,636	694	18,666	·53	·64	·43
1927	1,633	790	17,726	·53	·73	·41

92. **Deaths due to injuries by districts.**—The highest rate from suicide (·17 per mille) occurred in Jessore, from wounds and accidents (·60) in Calcutta, from snake-bite (·21) in Murshidabad and from rabies (·04) in 24-Parganas. The lowest, on the other hand, from suicide (·01) was recorded in Jalpaiguri, from wounds and accidents (·12) in Tippera, from snake-bites (·01) in Tippera and from rabies (·002) in Jessore. Calcutta returned no deaths from snake-bite, and Dinajpur, Jalpaiguri, Darjeeling, Bakarganj and Chittagong none from rabies.

Districts.	Suicides.		Wounds and accidents.		Snake-bites.		Rabies.	
	Deaths.	Death rates.	Deaths.	Death rates.	Deaths.	Death rates.	Deaths.	Death rates.
Burdwan	99	·07	382	·26	210	·14	22	·01
Birbhum	66	·08	218	·26	123	·14	3	·003
Bankura	77	·07	251	·24	133	·13	12	·01
Midnapur	109	·04	835	·31	407	·15	29	·01
Hooghly	130	·12	331	·31	180	·17	10	·009
Howrah	118	·12	431	·43	125	·12	10	·01
24-Parganas ..	248	·10	859	·35	369	·15	89	·04
Calcutta	25	·02	648	·60	..	..	21	·02
Nadia	208	·14	342	·23	231	·15	36	·02
Murshidabad ..	118	·09	376	·30	262	·21	21	·02
Jessore	301	·17	345	·20	230	·13	3	·002
Khulna	224	·15	476	·32	219	·15	25	·02
Rajshahi	160	·10	303	·20	306	·20	38	·02
Dinajpur	89	·05	309	·18	301	·18	..	..
Jalpaiguri	13	·01	175	·19	31	·03	..	..
Darjeeling	31	·11	46	·16	8	·03	..	..
Rangpur	82	·03	429	·17	169	·07	15	·006
Bogra	78	·07	289	·27	122	·12	18	·02
Pabna	81	·06	326	·23	107	·08	14	·01
Malda	30	·03	132	·13	155	·16	6	·006
Dacca	190	·06	531	·17	158	·05	28	·009
Mymensingh ..	170	·03	798	·16	196	·04	23	·005
Faridpur	104	·04	373	·16	185	·08	29	·01
Bakarganj	300	·11	983	·37	150	·06	..	..
Chittagong	39	·02	820	·51	53	·03	..	..
Noakhali	42	·03	753	·51	70	·04	6	·004
Tippera	58	·02	342	·12	42	·01	9	·003

(a) *Suicide*.—The number of female suicides exceeded the males in rural areas but was less than the latter in towns.

(b) *Snake-bites*.—144 cases (56 in Khulna, 55 in Rajshahi and 33 in 7 other districts) were admitted to the various hospitals for treatment. Of these so far as is known 51 were treated with potash permanganate, 30 with Lexin and 2 with anti-venene. All were cured except 17 that died and 7 in whose case the result was not known.



93. **Other epidemic diseases.**—In Midnapur district, special arrangements were made for the treatment of leprosy

in 3 dispensaries—Silda, Garbetta and Lalgarh and 13 cases have been treated. The total number of leprosy cases treated in dispensaries was 169. A survey propaganda was made in Salbani and Gopiballavpur thanas. Cases of Filiarisis and leprosy were found spreading throughout the Bankura district. A rough survey undertaken at the instance of the District Magistrate showed the existence of over 1,500 well-marked cases of leprosy in Malda district; all the medical officers in charge of the Board as well as Chanchal Raj Estate dispensaries, all the kala-azar and epidemic doctors of the Board and most of the private medical practitioners were trained for anti-leprosy work, while the District Board supplied medicines for treating cases of leprosy in all these dispensaries. In Bogra district, a few sporadic leprosy cases were detected as a result of a survey conducted by the District Health Officer. In the district of Faridpur, 18 cases of Beri-beri or epidemic dropsy occurred in thana Bhangra, but were speedily checked on taking the necessary measures on receipt of information, only 2 deaths being reported from this cause. In Bakarganj district, 8 epidemic dropsy cases were found in Muladi and Gournadi thanas. Proper steps were taken in all the affected houses and the epidemic subsided; 339 chicken-pox cases were also detected and necessary steps taken.

A fairly large number of cases of Framboesia Tropica, (Yaws) known locally as Myang, were investigated in September 1927. by Dr. B. C. Mukharji, when officiating Assistant Director of Public Health, Dacca and Rajshahi Circles. Its extreme prevalence at Ramgarh on the Feni River was first brought to notice in August 1927 by Mr. Stevens, the then Deputy Commissioner of the Chittagong Hill Tracts. It was found to be prevalent mostly during the rainy season and to run a latent course in some cases in winter. 116 cases were examined in the Feni Valley and 100 in the Chengi Valley and the incidence of the disease was found to be 11·5 per cent. in the former and 14·0 per cent. in the latter area. In the course of his investigation, 71 cases were treated by Dr. Mukharji with Neo-Salvarsan and 673 subsequently in 1928 by a Sub-Assistant Surgeon deputed for the purpose. The disease has been reported to have comparatively subsided with this treatment. It appears to have been imported from Burma, where it is widely prevalent in the Chin Hills. It is also reported to be fairly common in the Assam Valley and among the hill tribes of Cachar, while a few cases have been recently observed by Dr. Muir in Birbhum. Dr. T. N. Mukharji, late District Health Officer of Chittagong also found cases of this disease in March 1928 in some villages in the extreme north of the Chittagong district and he believed in its importation from the adjoining hill tracts.

Miscellaneous.

94. **Registration of births and deaths in railway limits.**—855 births and 921 deaths were reported from 12 districts in the province. 735 births alone were registered in Midnapur district. Deaths were distributed as follows :—

Districts.	Cholera.	Small-pox.	Fever.	Dysentery.	Diarrhoea.	Respiratory diseases.	Injuries.	Other causes.	Total.
Burdwan ..	..	..	..	..	..	..	..	..	4*
Birbhum ..	..	..	..	..	..	..	1	..	1
Bankura ..	..	..	..	..	..	..	1	..	16*
Midnapur ..	40	7	46	27	..	145	4	512	781
Howrah ..	10	..	7	3	..	8	11	10	49
Khulna ..	2	..	5	1	3	6	2	4	23
Jalpaiguri ..	..	..	1	..	..	..	..	..	1
Bogra ..	..	..	..	..	..	..	..	6	6
Dacca ..	..	..	..	..	..	..	..	1	1
Mymensingh ..	..	..	..	..	..	..	..	..	3*
Chittagong ..	..	..	2	4	..	4	..	4	14
Tippera ..	2	..	10	3	..	1	2	4	22

* Causes of death not specified.

From the table it will appear that registration of vital occurrences is very defective in railway areas. Three at least of the districts have failed to mention any cause of death. Excepting in a few, the number of deaths in the majority of the district railway areas seems too low to be taken as reliable. Thirteen of the districts have not supplied any information about the local vital occurrences, most probably because they were not furnished by the railway authorities.

95. Asansol Mines Board of Health.

	1927.	1928.	Percentage of differences.
Births ..	7,972	9,225	+ 15·7
Birth rate ..	24	28	+ 16·7
Infant deaths ..	1,061	1,283	+ 20·9
Infant death rate (per 1,000 of births) ..	133	139	+ 4·5
Child death (1—5) ..	512	643	+ 25·6
Child death rate (per mille) ..	64	70	+ 9·4
Total deaths ..	5,476	6,896	+ 25·9
Cholera ..	120	292	+ 143·3
Smallpox ..	72	13	— 82·0
Fever (malaria) ..	848	1,151	+ 35·7
Dysentery and Diarrhoea ..	103	310	+ 201·0
Plague ..	..	1	..
Influenza ..	..	4	..
Respiratory diseases ..	985	1,581	+ 60·5
Snake-bite ..	19	25	+ 31·6
Other causes ..	3,329	3,519	+ 5·7

The total number of births exceeded that in the previous year by 1,253 and the deaths by 1,420. Again, births were in excess of deaths by 2,329. Infant mortality rose from 1,061 in 1927 to 1,283 showing an increase of 4·5 per cent. in its rate. Mortality among children between 1 to 5 years of age also increased by 131 and the death rate by 9·4 per cent. Two births and 2 deaths (1 from fever and 1 from other causes) occurred within the railway limits against 3 and 5 during the previous year. All the births and deaths

were checked and no omission detected. Of all the causes of death, small-pox alone was reduced by about 82·0 per cent., but the others showed increases. Cholera claimed 172 victims more than what it did in the previous year. In addition to routine measures of disinfection, essential oil's mixture was administered daily as a cholera prophylactic, to all contacts which confined cholera to the localities of its origin. According to the Chief Sanitary Officer, no second case of cholera occurred among contacts thus protected. During the hot and rainy seasons, the wells in the collieries were sterilised daily with bleaching powder and the infected village tanks when necessary. A severe outbreak of malaria during October and November accounted for the majority of 1,151 deaths entered under the head of "fever." Deaths from dysentery and diarrhoea increased by 207 and from respiratory diseases by 596. The only case of plague that was registered in the area administered by the Board was imported from Azamgarh in the United Provinces.

96. Sanitation in the Ports of Calcutta and Chittagong—(a) *Port of Calcutta.*—The town and the Port of Calcutta were not officially declared to be infected with plague in 1928, hence the routine disinfection of clothing and bedding of Asiatic and African members of the crew and of 3rd class deck passengers of ships leaving for any port beyond British India was not enforced. Ten deaths (2 from dysentery, 2 from enteric fever and 6 from other causes) were reported in hospitals among the European seamen. The admission rate to hospitals for all causes calculated on arrival figure was 24·71 per mille against 27·07 and the death rate ·37 per mille against ·24 in the previous year. Sixty-four European seamen were admitted suffering from venereal diseases against 77 in 1927, the proportionate rate per mille 97·41 of the total number of admissions being less than the quinquennial mean 104·16. Six deaths among European seamen were registered at the Shipping Office as compared with 2 deaths in 1927, the death rate being ·22 per mille on arrivals against ·08 of the previous year. Seventy-one Asiatic seamen and boatmen were admitted to the hospital, where 6 died from cholera and 1 from other causes. 153 deaths (6 from

cholera, 22 from drowning, 9 from injuries, 1 from suicide, 1 from poisoning, 1 from malaria, 54 from accidents and 59 from natural causes) or 8·29 per mille were reported by the police among the Asiatic floating population against 115 or 6·23 per mille in the previous year. Nine ships arrived in 1928 with infectious disease on board; the patients were removed to hospital and necessary precautionary measures taken. No case of sleeping sickness was found on any vessel coming from the East African ports, and no alien leper was detected entering the country through the Port of Calcutta. Twenty-five seagoing vessels, 14 inland steamers, flats and launches and 31 lighters, bhars and dinghies were disinfected and 60 seagoing vessels were fumigated with the Clayton Apparatus. 1,079 deck passengers of 29 ships proceeding to the Straits were vaccinated in 1928 and a fee of 6 annas for each person vaccinated charged. 700 free vaccinations were also carried out among the floating population.

(b) *Port of Chittagong.*—Ten European seamen were admitted to the hospitals, but no death occurred. The admission rate to hospital for all causes calculated on arrival figure was 6·75 per mille against 10·56 in the previous year. Of the 60 admissions to the Chittagong General Hospital from among the Indian seamen, 2 died. A deck passenger on the S.S. "Pongtong" from Rangoon was found suffering from small-pox, the patient was removed to the hospital and the ship thoroughly disinfected and fumigated. One member of the crew of the S.S. "Chakdina" was found suffering from chicken-pox; he was sent to the local hospital and the part of the ship occupied by him disinfected. Many cases of Beri-beri arrived in the port by sea from the ports in Burma and some of them proved fatal. 104 crew were vaccinated during the year. Two steamers, one heave-up boat and 2 flats were disinfected and one ship was fumigated. No alien leper entered the country through the Port of Chittagong.

Public Health Laboratories.

97. I.—Bengal Public Health Laboratory—(a) *Routine Examinations.*—2,830 routine (including 1,400 water and 1,430 septic tank effluents), and 671 special samples were chemically examined.

	Years.		Increase + or decrease—.	Percentage of increase + or dec- rease—.
	1927.	1928.		
Chemical ..	3,678	3,501	— 177	— 4·8
Bacteriological	4,151	5,501	+ 1,350	+ 32·5
Food ..	1,996	2,422	+ 426	+ 21·0
Total ..	9,825	11,424	+ 1,599	+ 16·3

Special investigations were carried on the hydrogen-ion concentration (Ph value) of filtered and unfiltered water as well as on the Electric Conductivity (E.C.) with a view to find out its relation with total solids of water from different sources and localities. Compared with the previous year, there was an increase of 20 per cent. in the routine examination of samples of water, although the total routine samples diminished by 4·8 per cent. 4,793 routine and 708 special samples were examined bacteriologically showing an increase of 54 per cent. in the routine examination of water and of 32·5 per cent. in that of the total. These consisted of 3,135 routine samples of water and 708 special water samples, 1,052 septic effluents, 130 vaccine lymph, 266 rats for plague bacilli, 5 disinfectants and 205 miscellaneous including blood, urine, sputum, stools, etc. In the food section 2,351 routine and 71 special samples were examined. The following table shows the percentage adulteration of the various food-stuffs :—

Foodstuffs.	Percentage of adul- teration.	Municipa- lities. Per cent.	District Boards. Per cent.
Notified food-stuffs—			
Butter ..	68	70·5	Not received.
Milk ..	63	61·6	100
Ghee ..	49	42·3	75·0
Mustard oil ..	31	23·4	60·5
Flour ..	14	12·0	57·0
Tea ..	13	13·2	Not received.
Unnotified food-stuffs—			
Food stuffs fried in ghee ..	49·6		
Food stuffs fried in mustard oil ..	10·5		

It will be apparent that adulteration is going on on a much larger scale in the rural than in the urban areas. Forty-two per cent. of the total number of samples of food-stuffs examined came from Howrah Municipality alone. Only 41 out of the 91 municipalities under the jurisdiction of the Bengal Public Health Laboratory sent samples

and even here, as many as 24 sent less than 10 samples each. So far as rural areas were concerned, only 12 out of the 18 District Boards sent samples for analysis, the largest number being received from Nadia (84) and Dinajpur (77), Murshidabad sending only 22 samples. No samples were received from Burdwan, Bankura, Midnapur, Rajshahi, Rangpur and Malda.

(b) *Research Work*—(1) *Preparation of Vitamin B extract from rice polishings*.—From experiments carried on by feeding small red-beaked “Munia” birds with the vitamin B extract prepared according to the method adopted by the Institute for Medical Research, the Federated Malay States, it was found that the extract was only feebly potent and did not stand any comparison with the anti-beri-beri vitamin isolated by Jansen and Donath (Java) whose efficiency was tested by Lieutenant-Colonel Acton in the Tropical School with gratifying results.

(2) *Analysis of Smoke Washings*.—Experiments were conducted to find the best method of eliminating the largest amount of impurities carried into the atmosphere by smoke which is one of the principal causes of death from respiratory diseases, as indicated by the rapid increase in the death rate from these diseases especially in January when the wind velocity and rainfall—the natural scavengers of atmosphere—are at their minimum. The smoke washings from a jute mill which had recently introduced a smoke washing system whereby water is being discharged through arrangement of pipes as very fine spray into the smoke in the main flue of boilers, were analysed and the results submitted to the Director of Public Health.

(3) *A simple method of estimating available chlorine in bleaching powder*.—It was found by experiment that if the bleaching powder solution is run from the burette into the standard arsenic solution, the starch and potassium iodide solution can be used as an internal indicator in contrast with the original method of Pinot in which this is to be used as an external indicator in the form of iodised starch paper.

(4) *Ghee substitutes*.—It was found that ghee and vegetable substitutes show very similar energy-giving properties. A comprehensive note on the composition, manufacture, etc., of vegetable

product by Mr. N. Banarji has been printed by the Bengal Public Health Department and a paper entitled "A few observations on the process of making ghee, etc.," has been contributed to the Indian Science Congress by Lieutenant-Colonel Stewart and Mr. Banarji.

(5) *Clarification and subsequent purification of raw waters with certain reagents, like lime, alum and bleaching powder.*—Experiments were carried out by subjecting certain raw waters from different sources to treatment with coagulants and disinfectants and it was observed that a combined treatment with alum and free chlorine improved the chemical quality of the water to a greater extent than any one of these treatments employed separately. No final conclusions have yet been reached and the experiments are being continued.

(6) *Anacardium Occidentale.*—A paper on the food value of this nut, known in Bengal as "Hijli badam" was contributed to the Indian Science Congress. Physiological tests as to its nutritive value were also carried out by feeding young rats on it and satisfactory results were obtained. It was found that the edible oil prepared from its kernel was an important supplementary staple food, comparing favourably with mohua, groundnut or almond oil.

(7) *Souring of milk.*—Samples of sour milk were examined to determine whether the protein figure as determined by the Kjeldhal method remained constant in the souring of milk and it was found that the nitrogen figures remained practically unchanged as long as the acidity increased.

(8) *Electric conductivity of water.*—It was found by experiment that the ratio of electric conductivity to total solids lies between 11 and 15 in alluvial water with a few exceptions which are being further examined.

II.—Dacca Branch Public Health Laboratory.—(a) *Chemical Analysis.*—359 samples of water consisting of 322 routine, 6 from jails and 31 special, and 338 of sewage were analysed against 344 and 349 respectively in the previous year.

(b) *Bacteriological examinations.*—790 samples of water including 695 routine and 95 special were undertaken, compared with 712 in 1927.

(c) *Food analysis.*—973 samples of food-stuffs were examined against 781 in the previous year. The following table shows the results of analysis of the various food samples:—

Food-stuffs.	Number of samples examined.	Number found adulterated.	Percentage of samples found adulterated.
Ghee ..	198	127	64.1
Mustard oil* ..	468	246	52.6
Milk ..	176	75	42.6
Tea ..	5	1	20.0
Flour, atta, suji, etc. ..	4	..	..

*Seventeen of the samples were found to contain hydrocyanic acid.

In addition, 2 samples of ghee and 120 of milk were analysed for standardisation, as also 12 of alum and 25 of bleaching powder.

III.—Bengal Excise Laboratory, Calcutta.—The following table shows the number of samples examined:—

1. (a) Medical preparations for assay of alcoholic strength ..	5,911
(b) Special medicinal preparations for determination of spirit strengths, drug contents and general quality ..	181
2. Water for testing suitability for reduction of spirit ..	30
3. Distillery samples ..	677
4. Illicit liquors (Court case samples) ..	297
5. Country spirit ..	39
6. Tari ..	9
7. Pachwai ..	22
8. Bakhar ..	8
9. Brandy, beer and gin ..	19
10. Weights and measures for testing accuracy ..	23
11. Instruments for standardisation ..	275
12. Special samples for which analytical fees were charged ..	3
13. Quinine sulphate tablets ..	2
Total ..	7,496

IV.—Bengal Vaccine Laboratory—

(1) *Origin and establishment.*—On receipt of the requisite sanction to the temporary establishment of the provincial vaccine laboratory with effect from the 1st April 1927, a provincial laboratory was started although the actual manufacture of anti-cholera vaccine could not commence before the following August. In view of the heavy demands for vaccine to cope with the severe cholera epidemic during the six months

October 1927 to March 1928, the laboratory's working capacity was expanded with additional staff and equipment.

(2) *Designation, administration, accommodation and equipment.*—The new laboratory has been designated the Bengal Vaccine Laboratory and has been placed in charge of its Superintendent, Rao Bahadur V. Govinda Raju, who has already visited similar laboratories at Kasauli, Madras and Bombay to secure the latest standardised technique in manufacture. The Bengal laboratory is administered directly by the Director of Public Health and is accommodated in the entire upper floor (2,000 square feet) of the main building of the Bengal Vaccine Depot premises at Intally. The largest sized apparatus—autoclaves, incubators, sterilizers, stills and vacuum-fillers, have been procured and installed. Two modern electric refrigerators, each with an internal capacity of 50 cubic feet, have been provided in the premises. Ample storage and suitable furniture have been supplied. Electricity, gas and water are supplied from the city mains, the water being lifted to the roof by electric pumps.

(3) *Maintenance and stores.*—The laboratory is maintained by the Superintendent with the assistance of three qualified bacteriologists and other subordinate staff (24) of laboratory assistants, glass-blowers, laboratory attendants and servants, bottle-washers, packers and peons, all of whom were specially trained for this special work. The fullest advantage has been taken of the facilities afforded by Calcutta. European stores have been imported direct from the original manufacturers through the India Store Department in London. Large quantities of glass ampoules, bottles, flasks and tubes have been procured direct from the glass factories in Germany through their local agents, while the main items for chemicals have been made available similarly from the German chemical works.

(4) *Purchase and production (cost and sale of vaccine).*—With the specific sanctions received during the two years 1927-28 and 1928-29, aggregate quantities of 408,000 doses were bought from Kasauli, 632,000 doses from America and 1,589,170 doses from Germany. Kasauli vaccine cost 2 annas and imported vaccine nearly 2 pice a

dose. The large supply of imported vaccine has enabled the Bengal Vaccine Laboratory to organise its work still more effectively and to build up a substantial reserve as an insurance against future emergencies. In the annexed Statement A, a monthly account of production during the period from August 1927 to December 1928, aggregating 2,565,410 doses, is supplied with the observation that those quantities actually produced but destroyed owing to subsequent contamination have been excluded from the aggregate. The stock is kept in the cool room of the Calcutta School of Tropical Medicine in addition to the two large refrigerators at the laboratory premises. In the annexed Statement B, the quantities issued monthly to the several districts have been compiled. In addition to the central reserve at the Bengal Vaccine Laboratory, every district has been provided with a moderate supply for immediate local distribution.

STATEMENT A.

Output of Cholera Vaccine from August 1927 to December 1928.

Month.			
	1927.		c.c.
August	27,565
September	56,930
October	83,580
November	200,110
December	192,140
	1928.		
January	125,085
February	80,000
March	90,000
Total for 1927-28	855,410 doses.
April	120,000
May	120,000
June	150,000
July	160,000
August	180,000
September	180,000
October	240,000
November	280,000
December	280,000
Total for 9 months of 1928-29	1,710,000 doses.

STATEMENT B.

Issues of Cholera Vaccine, month by month and district by district from January to December 1928.

Districts.	1928.												Total.
	January.	Feb- ruary.	March.	April.	May.	June.	July.	August	Sep- tember.	Octo- ber.	Novem- ber.	Decem- ber.	
Burdwan ..	12,000	32,995	35,340	21,000	..	..	..	1,440	..	..	..	..	102,775
Birbhum ..	4,410	3,600	19,900	18,000	52,010	..	..	..	..	..	..	..	97,920
Bankura ..	400	400	1,000	..	..	1,000	..	..	500	..	360	..	3,660
Midnapur ..	6,600	9,800	35,200	55,700	37,440	9,000	..	..	6,000	..	25,880	18,000	203,620
Hooghly ..	3,350	2,400	27,390	400	20	..	..	..	..	..	16,200	500	50,260
Howrah ..	2,600	2,000	17,500	23,060	..	1,000	6,000	..	500	..	500	9,400	62,560
24-Parganas ..	20,370	14,292	15,640	11,200	18,330	2,400	1,700	340	640	4,500	8,185	11,000	108,597
Nadia ..	8,200	3,650	26,940	..	..	..	220	..	..	120	28,410	25,100	92,640
Murshidabad ..	10,000	27,500	18,000	18,000	..	..	..	..	..	..	17,280	20,000	110,780
Jessore ..	6,500	7,000	18,000	..	18,860	..	..	..	..	..	37,280	..	87,640
Khulna ..	..	10,720	5,800	20,900	19,440	..	..	..	..	..	1,860	18,000	76,720
Rajshahi ..	..	..	23,000	20,000	..	..	..	..	..	..	..	20,000	63,000
Dinajpur ..	..	..	..	18,000	..	..	..	..	..	..	12,000	20,000	50,000
Jalpaiguri ..	..	..	1,000	6,000	..	1,000	2,000	2,000	..	..	2,000	..	14,000
Darjeeling ..	..	..	..	..	..	500	5,000	..	..	..	..	..	5,500
Rangpur ..	..	3,000	..	18,500	19,440	..	..	..	19,440	..	360	10,000	70,740
Bogra ..	1,000	..	..	1,000	1,000	..	..	..	1,000	16,680	11,160	20,000	51,840
Pabna ..	1,000	..	8,400	20,500	..	..	..	..	..	25,320	17,280	..	72,500
Malda ..	..	..	..	..	21,100	..	..	..	..	..	..	20,000	41,100
Dacca ..	16,000	..	50,900	62,500	..	..	..	..	..	19,440	38,560	20,000	207,400
Mymensingh ..	5,800	8,000	21,740	18,000	18,000	..	..	20,000	24,420	19,440	56,700	20,000	212,100
Faridpur ..	..	1,000	18,000	20,000	..	..	..	5,000	..	19,440	17,280	20,000	100,720
Bakarganj ..	23,975	3,000	29,000	18,860	..	9,000	..	..	..	..	17,280	..	101,115
Chittagong ..	10,800	2,000	12,000	18,000	60	..	..	6,000	6,000	19,800	..	..	74,660
Tippera ..	10,500	6,000	28 860	..	18,000	..	..	..	2,500	..	18,300	40,000	124,160
Noakhali ..	10,000	15,320	30,500	18,000	15,360	..	10,000	20,000	..	..	19,530	17,420	156,130
Chittagong Hill Tracts ..	..	..	1,000	..	..	..	1,500	1,000	..	..	990	1,000	5,490
Mills and Factories	780	560	1,160	..	520	220	1,100	500	..	520	1,260	900	7,520
Railways and Stea- mer Companies	970	220	3,140	..	680	680	2,500	500	..	100	3,060	160	12,010
Tea Gardens ..	9,981	500	5,420	..	200	1,480	2,220	257	..	240	600	1,000	21,898
Central Co-opera- tive Anti-Malaria Society and Bengal Health Association ..	..	..	..	..	..	..	..	..	..	..	..	1,000	1,000
Miscellaneous ..	9,090	2,495	602	1,830	2,820	2,730	..	40	40	20	360	560	20,587
Total ..	174,326	156,452	455,432	409,450	243,280	29,010	32,240	57,077	61,040	125,620	352,675	314,040	2,410,642

**V. Darjeeling Municipal Labora-
tory.**—Seventy-four samples of water were examined chemically and 232 bacteriologically, 27 samples of sewage effluents chemically, as also 2 of alcoholic liquors, one of common salt and one of soda and superphosphate of lime. In addition, the following samples of food-stuffs were examined with results noted below:—

Food-stuffs.	Samples examined.	Samples found adulterat- ed.	Percent- age.
Milk ..	311	12	3·8
Butter ..	14	5	35·7
Ghee ..	13	8	61·5
Mustard Oil ..	47	23	4·9

1,067 clinical samples were also examined, consisting of 254 urine, 250 blood, 269 stools, 145 sputa, 111 throat swabs, 2 aspirated fluids, 2 hairs, 27 pus and 7 auto-vaccine.

98. School Hygiene.—School medical inspection work in Bengal increased further in 1928 in the mufassal as well as in the city of Calcutta, where 3 part-time school medical officers were appointed for conducting medical inspection of scholars of 33 Government and Government-aided schools. In the mufassal, registered medical practitioners or local health officers undertook the work voluntarily in 6 schools, after practical demonstrations of the methods of school medical inspection had been

given to them by the Medical Inspector of Schools. Another 6 schools in the mufassal appointed their own school medical officers on subsidies varying from Rs. 30 to Rs. 50 a month.

One college and 176 schools were visited and 13,750 students examined for their health in 1928; of these 5,676 students were examined by the 3 newly appointed subsidised school medical officers of Calcutta, 2,874 by Dr. Shome, who is in charge of school medical inspection work under Asansol Mining Settlement and 1,517 by Dr. Adhikari of Narayanganj Municipality, the others examining less than 1,000 each. 541 girls were also examined about whom statements in detail are wanting. The results of examination of others are detailed below:—

Of the 13,750 students examined, 22·4 per cent. were well nourished, 52·9 per cent. fairly nourished, while 24·7 per cent. were ill nourished. 25·5 per cent. had good clothing, 44·5 per cent. fairly good and 30·0 per cent. had bad clothing. 54·7 per cent. had shoes while the remainder none. As regards height, they compared favourably with the European standard, but as regards weight, they were about 4 to 5 pounds less on the average than the European boys of the same age. 31·8 per cent. were between 4 and 10 years of age, 55·6 per cent. between 11 and 15 years of age and 12·6 per cent. of 16 years and over. 4·3 per cent. had skin disease and 18·4 per cent. had dirty skins. 9·4 per cent. had carious teeth, 2·02 per cent. were suffering from some kind of nasal disease. 10·4 per cent. had enlarged tonsils, 1·1 per cent. adenoids and 2·1 per cent. had enlarged lymph glands. 1·6 per cent. were suffering from diseases of the ear, mostly otorrhœa. 1·6 per cent. had bronchitis, while 32 had either actual or suspected tuberculosis of the lungs. 4·3 per cent. in all Bengal and 1·26 per cent. of the Calcutta boys examined had enlarged spleen. 10·1 per cent. had eye troubles, the majority suffering from defective vision. 310 students were examined at the eye clinic recently opened by the School Hygiene Bureau in the refraction room of the Calcutta Medical College, and 150 supplied free with spectacles as follows:—56 for hypermetropia, 56 for myopia, 23 for hyperopic astigmatism, 10 for myopic astigmatism and 3 for other defects of vision. 4·4 per cent. had no marks of vaccination. ·5 per cent.

had heart troubles, ·3 per cent. rickets, ·2 per cent. deformitis, ·6 per cent. defective speech mostly stammering, while 2·4 per cent. had enlargement of liver. Only one boy was found to have paralysis. 3·4 per cent. were found suffering from malaria and kala-azar, majority from the former. Ninety-four boys were suffering from measles, 11 had diphtheria, 30 smallpox, 23 whooping cough and 165 dysentery, 2·3 per cent. were suffering from other infectious diseases.

Of the 13,750 students examined, 3,378 were suffering from poor nutrition, while 8,287 had some bodily defect or the other; of the latter number in the case of 4,055, the defects were of such a degree as to require immediate notification to their parents or guardians. This was done as usual and in the case of Calcutta students a printed reply post card was sent subsequently to the guardians, according to a recent notification, in order to ascertain whether anything was actually done at home to rectify those defects. No reply was received in the majority of cases which is very unfortunate.

As mentioned above, one college and 176 schools were visited; of these 62 had insufficient floor space, 8 were improperly ventilated, 59 were insufficiently lighted, 12 had no play grounds and 13 had neither privies nor urinals. The sanitary conditions of 36 schools were not reported by the examiners concerned. In the Asansol Mining area 13 primary schools had no buildings of their own. At Santiniketan, Bolpur, classes were held in the open air under the shade of trees.

Besides the inspection work, the Assistant Director in charge of School Hygiene examined 132 plans for educational institutions. The School Hygiene branch also organised dai training classes throughout Bengal, which were inspected from time to time by the Medical Inspector of Schools in his tours. The branch also assisted at the annual Calcutta Health Exhibition by opening a stall dealing with school medical inspection work.

99. Dai Training.—During the year 1928-29 grants-in-aid were made to 24 District Boards, 26 municipalities and Saroj Nalini Dutt Memorial Association for starting 100 training classes consisting of 10 dais each. The following local bodies were not able to undertake the work for reasons noted against each.

(1) The Midnapur District Board, to whom five classes were allotted, could only start four classes during the year; they have however started another class only recently.

(2) The Nadia District Board, to whom three classes were allotted, could only start one class. The District Health Officer, however, promised to start two more classes after the Puja holidays.

(3) The Noakhali District Board, to whom two classes were allotted, could only start one class; the grant for another class which was drawn by the board was directed to be sent to the Khulna District Board, which started one class more than the number allotted to it.

(4) The Cox's Bazar Municipality, to whom one class was allotted, could not start it for want of pupils and the amount was refunded to the Treasury.

(5) The Tippera District Board, to whom two classes were allotted, could only start one class. The District Health Officer, however, agreed to start the other class as early as possible.

(6) The Comilla Municipality, to whom one class was allotted, was not able to start it. The authorities have, however, arranged to start it after the Puja holidays.

(7) The Budge Budge Municipality, to whom one class was allotted, could not start it for want of pupils.

(8) The Naihati Municipality, to whom two classes were allotted, could only start one class, as they have taken Rs. 75 from this year's grant to pay up debts for the class held previously. They intend to utilise the balance in a future class.

(9) The Bakarganj District Board started one more class than the number allotted with the balance from the previous year's grant. They have still funds left with them for one class from the previous year's balance.

No report was submitted by the following local bodies:—

- (1) Bankura District Board.
- (2) Dinajpur District Board.
- (3) Katwa Municipality.
- (4) North Dum Dum Municipality.
- (5) Baduria Municipality.

The Medical Inspector of Schools, however, visited the first and the last three places and ascertained that classes were started by each of the four authorities with 10 pupils in each class.

During the year under review the different bodies in Bengal to whom allotments were made for training of indigenous dais, so far as reports are available, trained 1,098 dais in 98 classes and distributed 793 bags and 552 certificates.

100. Educational Propaganda and Publicity.—(1) The growing demands and constant requisition for officers and materials are clear indications of the increasing popularity and appreciation of the work of the Publicity Branch. It is satisfactory to note that public bodies, private institutions and individuals holding widely divergent political views have alike demanded the services of the staff.

(2) The post of the Publicity Officer was held by Rai Sahib K. P. Ray and that of the Assistant Publicity Officer by Babu Srish Chandra Goswami. They visited 130 places, including interiormost villages and delivered 372 health lectures. They were on tour for 154 and 108 days respectively.

(3) The obvious beneficial effects of such educative campaigns were amply proved by the marked increase in the number and the growing interest evinced by the people, in child and maternal welfare, and health shows throughout the province. Almost all the district headquarters, subdivisional towns, a number of Union Boards and several small villages participated in the health welfare movement.

Models, charts and posters were supplied to the shows and, whenever available, officers were deputed to help the organisers with lantern lectures. A generous supply of leaflets and pamphlets on various health subjects were made on each occasion. The departmental health films, especially those relating to maternity and child-welfare were in special request, with the result that they have become thoroughly worn out. It is gratifying to note that as a result of this movement, the womenfolk of Bengal are beginning to take a keener interest in matters pertaining to their babies and their own welfare.

(4) Eighty-nine exhibitions and 77 baby-shows were organised during the year under review as compared with 35

exhibitions and 32 baby-shows during the previous year. The Calcutta Baby Week and Health Committee has again this year expressed its appreciation for the help it received from the officers of this branch in organising the Calcutta show.

(5) The Eastern Bengal Railway Exhibition train which has now become an annual affair, had a very successful itinerary over the meter gauge sections, including Dacca and Mymensingh. Over 38,600 people visited the health car and twelve to fifteen times the number, the evening cinema shows. On a rough computation there must have been about 5 lakhs of visitors all combined. This method of propaganda is by far the most telling as it is possible to approach a larger number of illiterate agriculturists and others by this means. The "tamasha" is both refreshing and instructive and it would be far more beneficial if this could be carried out throughout the year in conjunction with the railway authorities.

(6) Sixty sets of multi-coloured slides were renewed and 30 new slides on foods and vitamins were designed and prepared by the Publicity Branch. It has now been conclusively proved on all hands that the best form of mass education is by visual representation and, as already stated, it is becoming absolutely necessary to produce films with a local touch to appeal to the masses. The department possesses 24 sets of films including 38 reels on various preventible diseases.

(7) More than four hundred thousand leaflets and pamphlets on preventible diseases were issued by this branch. During the year the total number of leaflets and pamphlets distributed came up to about 3 lakhs. The posters and charts prepared and designed by this section were quite popular and were largely in demand from numerous sources.

(8) Local newspapers and the Indian Broadcasting Company have been utilised as other agencies for publicity purposes. Highly technical subjects translated and published in popular vernacular attracted public notice.

(9) It is satisfactory to note that the Murshidabad District Health Committee caused an intensive health propaganda by means of films and lantern slides lent by this department to be carried on

within its jurisdiction for a whole year. No less than 50 bioscopic shows and a large number of magic lantern demonstrations were given. The immediate effects of such a campaign might not be obvious but it is almost certain that this work has greatly facilitated the duties of the newly created rural health staff in pushing forward their preventive work.

101. **Fairs and Melas.**—Cholera cases were reported to have occurred at the following fairs:—

(1) *Ganga Sagar Mela.*—The mela lasted for 3 days—13th to 15th January and was attended by not less than 40,000 people. Although the mela met in the midst of a most virulent and widespread epidemic of cholera in Bengal, the disease left the pilgrims practically untouched. Only 3 cases occurred on the mela ground of whom one died and the other two were removed to Diamond Harbour Hospital. The dispersal of the pilgrims had little effect on the prevalence of the disease in the places through which they passed including the districts of the 24-Parganas, Midnapur and Howrah which account for a large proportion of the Bengali visitors, as shown by a comparison of the deaths from cholera in these places in the weeks ending in the dates preceding and following the mela. This happy result was due to the sanitary arrangements at the mela supplemented by anti-cholera inoculations performed among the pilgrims, over 50 per cent. of whom were inoculated before they reached the mela and 3,498 in the mela ground itself, besides 467 persons inoculated in the village of Begnakhali on the 3rd January and 848 done in Begnakhali, Dhoblahat, and Mariganga on 15th, 17th and 19th respectively.

(2) *Nangalband Mela (District Dacca).*—About 1,25,000 pilgrims attended the mela on the 17th April. One case of cholera was admitted to the cholera shed but was subsequently discharged cured. A few suspected cases were admitted to the shed but were found to be suffering from diarrhoea and treated accordingly. No case either of smallpox or chicken-pox occurred in the mela ground, 206 primary and 4,363 revaccinations were however performed there. Usual sanitary arrangements were made and all food shops were regularly inspected by the Sanitary Inspectors.

(3) *Gan Mela (Nadia district).*—Cholera broke out in Nabadwip Municipality (Nadia district) during the Gan Mela, where 61 deaths occurred from this cause. The mela started about the middle of January to middle of February 1928 and was attended by about 30,000 people; municipal masonry wells, tube wells and private wells were disinfected. The food supplies were examined by the Municipal Health Officer and the Sanitary Inspector. Two temporary local doctors were engaged at the cholera hospital with the municipal health officer at their head. Cholera patients were segregated and anti-cholera inoculation was freely administered. Privies and urinals were disinfected and sale of unwholesome food stopped.

(4) *Shivaratri Mela.*—One death occurred from cholera at Shivaratri mela in Sitakund held on 16th to 23rd February, and where 37,000 persons assembled. Drinking water was obtained from Sitakund Hill reservoir and 12 reserved tanks. Sale of unwholesome and stale food, unripe fruits and decaying vegetables was strictly prohibited. Privy arrangements consisted of 12 trench latrines worked by 65 sweepers. Two Sub-Assistant Surgeons and one Sanitary Inspector were in charge of general, medical and sanitary arrangements.

102. **Septic Tank Latrines.**—Three new septic tanks were installed at Fort William Jute Mills cooly lines, 2 at Adamjee Jute Mills and one each at Jessop & Co. (Dum Dum), Ludlow Jute Mill and the E. B. R. Loco. Workshops (Kanchrapara), while another four were under construction at Orient Jute Mills cooly lines, Gramophone Factory (Dum Dum), Ishapur Rifle Factory and Paper Mills (Raniganj). 1,715 samples of effluent were sent to the Bengal Public Health Laboratory, of which 531 were examined bacteriologically and 1,184 chemically. Several installations were temporarily closed down when found to contain an excessive amount of solid matter, cleaned out and the contents trenched. Filter beds were attended to, new filtering material being put in as required, while special attention was paid to the sterilising of the final effluent. The Hooghly Jute Mills aerobic plant experiment has now been in use for about two years and it has been conclusively proved that it is capable of purifying either a raw sewage or a septic tank effluent.

SECTION VII.

103. **History of Vaccination.**—This section is dealt with in a separate report.

SECTION VIII.

104. **Sanitary Works (Military).**—This section is excluded from provincial public health reports.

SECTION IX.

Sanitary Works (Civil).

105. **General Remarks.**—The next four paragraphs dealing with the financial aspect of public health administration in the municipal and rural areas refer to the financial year 1927-28, and are based on the last census population, the income and expenditure being taken from the Government Resolution on the Reports on the Working of the District Boards and Municipalities in Bengal during that year. The previous year's ratios have been revised accordingly, for the purpose of comparison.

106. **Municipalities: Their Income and Expenditure.**—Excluding Calcutta and Gouripur (a newly created municipality which was not empowered to levy taxes during the year) there were 115 municipalities in Bengal in 1927-28 with an aggregate population of 2,026,573 and an average population of 17,622 for each municipality. The total income, excluding the opening balance and extraordinary income and debts during the year was Rs. 79,72,168 as compared with Rs. 84,74,110 of the previous year. The average income of each municipality was thus Rs. 69,323-3-2 and that per head of population Rs. 3-14-11, against Rs. 73,687-14-7 and Rs. 4-2-10 respectively in 1926-27. The total receipts from all sources including the opening balance amounted to Rs. 1,12,10,926 against Rs. 1,12,17,720 in the previous year. There was thus a decrease of Rs. 5,01,942 or 5·9 per cent. in the total income and Rs. 6,794 or ·06 per cent. in the total receipts. The opening balance was Rs. 15,64,715 or annas 12-4 $\frac{1}{4}$ per head of population, while extraordinary income and debts amounted to Rs. 16,74,043 or annas 13-3 per head against Rs. 17,88,177 and Rs. 9,55,433 or annas 14-1 $\frac{2}{5}$, and annas 7-7 respectively per head of population in the previous year.

The total expenditure during the year was Rs. 84,14,462 against Rs. 80,72,764 in the previous year, showing an increase of Rs. 3,41,698 or 4·2 per cent. The proportion of the total receipts (including the opening balance) spent in 1927-28 on the several heads of expenditure is shown below :—

Heads.	Percentage		Increase + or de- crease.	
	1926-27.	1927-28.		
Sanitary Works..	..	40·4	42·4	+2·0
Public Safety	5·6	5·9	+0·3
Roads	7·9	8·3	+0·4
All other requirements	..	17·9	18·3	+0·4

107. Municipal Expenditure on Sanitation.—The average expenditure per head of municipal population on certain sanitary works is shown below :—

Heads.	1926-27.				1927-28.			
	Rs.	Rs.	A.	P.	Rs.	Rs.	A.	P.
Conservancy	1·086=	1	1	4·5	1·120=	1	1	11
Water Supply	·520=	0	8	3·8	·705=	0	11	3·3
Drainage ..	·294=	0	4	8·4	·158=	0	2	6·3
Disposal of dead (including burial places and burning ghats) ..	·022=	0	0	4·2	·026=	0	0	4·9
Markets and slaughter-houses ..	·023=	0	0	4·4	·025=	0	0	4·8
Medical relief (Hospitals and plague charges) ..	·154=	0	2	5·5	·164=	0	2	7·4
Vaccination ..	·015=	0	0	2·8	·017=	0	0	3·2
Charges on account of Health Officers and Sanitary Inspectors ..	·089=	0	1	5·0	·092=	0	1	5·6
Registration of Births and Deaths ..	·008=	0	0	1·5	·008=	0	0	1·5
Other Sanitary Requirements ..	·026=	0	0	4·9	·032=	0	0	6·1
Total ..	2·237=	2	3	9	2·347=	2	5	6·1

Compared with the previous year, there were increases under all heads except under drainage, viz., 3·1 per cent. under "Conservancy," 35·6 per cent. under "Water Supply," 18·2 per cent. under "Disposal of Dead," 8·7 per cent. under "Market and slaughter-houses," 6·5 per cent. under "Medical Relief," 13·3 per cent. under "Vaccination," 3·4 per cent. under "Charges on account of Health Officers and Sanitary Inspectors" and 23·1 per cent. under "Other Sanitary Requirements," while there was a decrease of 46·3 per cent. under

"Drainage." It may be noted in this connection that while Re. 1-1-11 was spent on "Conservancy" per head of population, only annas 2-7·4 were devoted to "Medical relief," a little over 3 pies to vaccination and only 1·5 pies to "Registration of births and deaths." The average expenditure on sanitation per head of population was Rs. 2-5-6 against Rs. 2-3-9 in the preceding year, showing an increase of 4·9 per cent. The expenditure incurred by some of the municipalities during the year on certain subsidiary heads is shown below :—

	Rs.
(1) Anti-malaria measures	4,564
(2) Public Health Propaganda work including health exhibition	7,775
(3) Charges on account of infectious diseases hospitals	23,331
(4) Charges on account of vaccinators ..	31,608

108. Rural areas: Income and Expenditure.—The total income of the District Boards excluding the opening balance and debts amounted to Rs. 1,36,23,825 against Rs. 1,26,48,901 during the preceding year, the average income per head of population being 5 annas against 4 annas and 8 pies in the previous year. The total receipts from all sources including the opening balance during the year were Rs. 1,80,16,871 against Rs. 1,75,88,963. There was thus an increase of Rs. 9,74,924 or 7·7 per cent. in the total income and of Rs. 4,27,908 or 2·4 per cent. in the total receipts. The opening balance was Rs. 34,68,554 or about anna 1-3 per head of population against Rs. 37,15,062 and anna 1-4 in the previous year. The average incidence of taxation was annas 2-10 per head against annas 2-11 in 1926-27. 34·9 per cent. of the total receipts was spent on public works, including 19·9 per cent. on "Communications," 5·1 per cent. on "Water Supply," 2·8 per cent. on "Buildings" and ·07 per cent. on "Drainage," against 36·8 per cent. 20·8 per cent., 4·9 per cent., 3·8 per cent. and 0·1 per cent. respectively during the previous year, while only 14·5 per cent. or 11 pies per head was devoted to medical relief, including sanitation and vaccination against 12·3 per cent. or 9 pies per head during the previous year, vaccination receiving 1·6 per cent. of the total income or 1·2 pies per head of population and sanitation 3·8 per cent. or 3·07 pies per head against 1·09 per cent., 9 pies, or 2·8 per cent. and 2·1 pies respectively in the previous year.

109. Sanitary Works in Towns and Rural Areas.—The expenditure on sanitary works by Government, Municipalities and District Boards during the year 1927-28 amounted in the aggregate to Rs. 55,31,567 against Rs. 34,86,953 during the previous year, showing an increase of 58·6 per cent. as compared with the previous year. The most important items each costing Rs. 5,000 or more are shown below :—

	Rs.
Bhatpara Sewerage Scheme	21,10,365
Tittagarh Sewage Scheme	11,88,990
Comilla Water Works	3,41,467
Extension of the Naihati Water Works ..	1,37,000
Construction for the Suri Water Works ..	63,875
Extension and improvement of the Khulna Water Works	29,116
Sanitary Works in Sagar Mela	21,073
Contribution by the 24-Parganas District Board to the District Water Supply Committee	15,495
Construction of Burdwan Municipal Market.	10,595
Dacca Sewerage Scheme	8,723
Improvement of Dacca Municipal Water Works	7,871
Sinking of a tube-well for the Brahmanbaria-Municipal Water Works	6,320
Capital outlay for the Tollyganj Municipal Water Supply	6,021
Construction for the Naihati Burial Ground	5,874
Sinking of a tube-well in the Tamluk Municipality	5,800
Construction of a market in the Khulna Municipality	5,506
Extension of the Khulna Municipal Trenching Ground	5,498
Fees for scrutiny of Bhatpara Sewerage Scheme	5,000

110. Sanitary Administration in Municipal and Rural Areas.—Eighteen Health Officers and 94 Sanitary Inspectors were employed in the municipalities of the province excluding Calcutta. The total number of the sanctioned appointments for Health Officers and Sanitary Inspectors was 21 and 99 respectively in the year. Midnapore, Serampore and Barisal Municipalities continued in the evasion of their legal responsibility to employ Health Officers and Tittagarh, Bhatpara, Barasat, Rajshahi and Sherpur (Bogra) to maintain Sanitary Inspectors.

All the District Boards except Darjeeling were provided with qualified Health Officers and were under non-official Chairmen. 272 Health circles, each under a qualified Sanitary Inspector or an Assistant Health Officer, were working under the Rural Public Health Organisation scheme, in as many police thanas, during the year under review. Under the same scheme, a number of public health committees were also started in different districts.

111. Village Self-Government.—3,005 Union Boards worked during the year against 2,260 in the previous year. In several districts Union Boards were sanctioned by Government but could not be formed before the close of the year. Most of the District Boards took much interest in the working of Union Boards, delegated duties to them and assisted them with such grant-in-aid as they could afford. Bankura alone not only showed no sympathy or interest but adopted a definitely obstructive attitude towards the Union Boards which were established in that district. The Union Boards which worked during the year realised a total sum of Rs. 42·5 lakhs as rents of chaukidari chakran lands. Receipts from other sources brought the total income up to Rs. 56 lakhs, of which Rs. 35·2 lakhs were spent on establishment and collection charges, leaving a balance of Rs. 20·8 lakhs only which as in the previous year, was utilised on communications, medical aid, education, water-supply and sanitation. A number of the Union Boards improved the local water-supply and undertook small irrigation works and village anti-malaria work.

SECTION X.

112. Personal Proceedings.—I was in charge of the Department throughout the year. Dr. Khambata occupied the post of Director of the Bengal Public Health Laboratory while Drs. Sufi, Brahmachari, Sur, Ray, Batra, Mitra and Mukharji held the posts of the Assistant Directors of Public Health. Dr. Chakravarti continued in his post of Superintendent of the Bengal Vaccine Depot, Rao Bahadur Govinda Raju in that of the Superintendent of the Bengal Vaccine Laboratory, Rai Sahib Surendra Nath De as the Assistant Chemical Examiner for Excise, Rai Sahib Kali Prasanna Ray as the Publicity Officer, Mr. Iyengar as the Entomologist and Mr. Elias as the Personal Assistant. All of them deserve my thanks in maintaining the efficient working of the Department.

CHAS. A. BENTLEY,
*Director of Public Health,
Bengal.*

CALCUTTA :
The 12th February 1930.

Part II

Annual Report of the Sanitary Board, Bengal, 1928

113. The Board consisted of *six* official and *eight* non-official members, as in the previous year, but the term of office of the non-official members mentioned in the last report having expired in March, they were all re-appointed in July for a term of another year, except that Dr. T. Ahmed was appointed in place of Dr. A. K. H. Pollock to represent the Council of Medical Registration and the State Medical Faculty, Bengal.

Mr. J. G. Drummond, I.C.S., President, and Dr. C. A. Bentley, and Mr. F. C. Griffin, Joint Secretaries, held their respective offices throughout the year.

Major General G. Tate, Vice-President, was on leave from 26th April 1928 to 17th October 1928. During this period Lieut.-Colonel W. V. Coppinger, I.M.S., officiated for him.

2. The Board held five meetings during the year, all in Calcutta.

They also held a special meeting in Calcutta to consider the following resolution moved by Rai Gopal Chandra Chatterjee Bahadur:—

“That in view of damaging remarks made by Sir William Willcocks, K.C.M.G., the great Irrigation Expert, in his speech in the British India Association on the 6th March 1928, against the policy adopted by the Irrigation Engineers of Government which, according to him, has not only brought economic ruin but also malaria, it is extremely desirable that the Board, consisting as it is of best irrigation engineers and sanitary experts, should pass its opinion on its truth or otherwise.”

In connection with the motion the Board considered Sir William Willcocks' lecture referred to, and certain notes on the subject drawn up by the Irrigation Department and by Rai Gopal Chandra Chatterjee Bahadur, respectively.

The Board resolved that they agreed with the action of the Legislative Council requesting the appointment of an expert committee to enquire into the question of Irrigation Policy, to which attention has been drawn by Sir William Willcocks.

They also agreed that the flushing of the land by flood water will have a beneficial effect on the health and prosperity of the people, and that any scheme requiring the construction of

bunds across the drainage of the country should be carefully considered by sanitary experts before such scheme is given effect to.

3. The following schemes were approved by the Board and forwarded to Government:—

Sketch projects.		Estimated cost.
1	Burdwan Waterworks Improvement ..	3,01,800
2	Berhampore Water-supply ..	26,800
3	Noakhali Waterworks Improvement ..	15,000
4	Nawabganj Water-supply ..	53,500
5	Jalpaiguri Water-supply ..	1,50,000
6	Rajshahi Water-supply (revised) ..	3,33,000
Detailed projects.		
1	Asansol Water-supply	4,50,000
2	Tamluk Water-supply	39,300
3	Bansberia Water-supply	96,700
4	Chandpur Water-supply (Northern section)	1,53,000
5	Howrah Central Drainage	4,15,200

4. A sketch project for the drainage of a portion of Ward No. I of Baranagar Municipality forwarded for administrative approval of Government was considered by the Board, but was returned to the Divisional Commissioner owing to the financial proposals of the local authorities being incomplete.

6. A scheme for sinking six tube-wells within the Bally Municipal area was considered by the Board and forwarded to Government for sanction.

7. A scheme for supplying water in the Murshidabad Municipality by sinking a number of tube-wells in the different wards of the Municipality was forwarded by Government for an expression of opinion of the Board. Government were advised to return the scheme to the Divisional Commissioner for further consideration by the local authorities in consultation with the Chief Engineer, Public Health Department.

114. **Inspection reports of Municipalities.**—These were circulated to the members of the Board and discussed at the meetings.

115. **Water analysis reports.**—The Board examined the analysis reports on water-supplies of the various towns in the province and took such action as was considered necessary.

J. G. DRUMMOND,
President.

C. A. BENTLEY,
F. C. GRIFFIN,
Joint Secretaries.

CALCUTTA :
The 19th January 1929.

Part III

Sixteenth Annual Report of the Chief Engineer, Public Health Department, Bengal, 1928

116. **Establishment.**—Mr. W. J. Berry and Rai Saheb K. C. Banerjee, Executive Engineers, held charge of the Dacca Sanitary Works and Presidency Divisions, respectively, throughout the year. Mr. S. N. Ghose, Executive Engineer, Central Division, was on leave from 30th October to 14th November, but no acting arrangement was made for this short period, the work of his Division being carried on by myself.

Babu B. N. Mazumdar, Assistant Engineer, who continued to act as Executive Engineer, held charge of the Western Division throughout the year.

The strength of the Upper Subordinate engineering establishment remained the same as in the previous year.

117. **Schemes prepared.**—

(a) SKETCH PROJECTS.	Estimated cost. Rs.
(i) Rajshahi water-supply—The scheme for supply from storage tanks having been abandoned, a revised scheme, with two 6" tube wells as the source of supply, was prepared	3,32,000
(ii) Dinajpur water-supply—Supply from tube wells	2,60,000
(iii) Hooghly-Chinsura water-supply—Extension scheme	2,30,000
(iv) Brahmanbaria water-supply—Supply from a tube well. The local authority having failed to finance the previous scheme, estimated to cost Rs. 1,09,300, a modified scheme on the decentralised storage system was prepared	66,800
(v) Kotrung water-supply—Supply from tube well. The local authority having failed to finance the previous scheme, estimated at Rs. 75,400, a fresh sketch project on a reduced scale was prepared	62,000
(vi) Berhampore water-supply—A scheme for improvement of water-supply in the Gorabazar and Cossimbazar wards of the municipality by means of tube wells was prepared	26,800
(vii) Narayanganj water-supply (West Bank) Extension scheme	1,27,500

(b) DETAILED PROJECTS.

(i) Bansberia water-supply	96,700
(ii) Howrah Central Drainage (Canal) Scheme	4,15,200
(iii) Chandpur (North) water-supply (revised)—Source of supply, Chandpur Khal	1,49,000
(iv) Tittaghlur sewerage (revised)	12,04,309
(v) English Bazar water-supply—A revised scheme on the decentralise storage system was prepared	1,14,000

118. **Schemes examined.**—(i) A detailed scheme for the drainage of a portion of Bogra town, prepared by the local authority, was examined by this department.

(ii) A scheme for the supply of water through 16 tube wells to be sunk at different suitable sites within the municipal area was submitted by the Chairman of the Debhata Municipality for examination. The estimate of the scheme was scrutinized and an opinion expressed.

119. **Tube wells.**—In the early part of the year the services of the boring plant and staff of the department were lent to the District Magistrate, Malda, for sinking experimental tube wells in the *barind*. The staff carried out boring operations at Nachoul, Kusumdanga and Parbatipur.

The boring plant was under repair for some weeks after its return from Malda.

About the end of the year an experimental tube well was sunk at Feni Bazar. The yield of the well was copious and the quality of the water good.

This boring has indicated that there are possibilities of success of tube wells in the area known as the "Old formation" of the district, *i.e.*, the area lying to the north-east of Feni.

During the year the supervision of the sinking of four tube wells at Hossainpur, Mohangunge, Elashin and Pingna in the district of Mymensingh was undertaken by the department at the request of the District Magistrate.

The wells at Hossainpur and Mohangunge were completed and that at Elashin was in progress at the end of the year.

120. **Works under construction.**—The following is a short account of the progress made with the various schemes in course of construction during the year under supervision and control of the department :—

(i) *Dacca unfiltered water-supply.*—The erection of the machinery was completed, and the machinery was tested and

taken into use. The 3" main to connect the Babu Bazar Dumping Depot and the automatic flushing tank at the head of the Babu Bazar sewer was laid and taken into use. The plant has been in operation on an average of six hours daily since early in December, supplying water to the water-works.

(ii) *Dacca waterworks improvement scheme III*.—Tenders were called for the pipes and specials for the new pumping and distribution mains, as well as for the new suction pipe, and a good portion of these pipes were delivered and laid before the end of the year.

Tenders were also called for three elevated reservoirs, and Messrs. Braithwaite & Co. were given a contract for the supply of three pressed steel reservoirs of 200,000, 120,000 and 80,000 gallons capacity, complete with steel stagings.

Contracts were also let out for the construction of the foundations for these reservoirs, the foundation for the Kasimnagar reservoir being completed early in November. The erection of the steel staging for this reservoir was completed by the end of the year.

The new 7" rising main to this reservoir as well as the 10" rising main to the Wari reservoir were completed except for the joining up at each end.

The laying of the new suction pipe and the extension of the jetty were taken in hand in December.

Owing to the favourable rates at which C.I. pipes were purchased, a saving of Rs. 40,000 occurred on this scheme, and a proposal to utilise this sum in certain additional works was put forward by the department and accepted by the municipality.

(iii) *Dacca main drainage extension scheme*.—(a) *Sewers and dumping depots*.—During the year the following lengths of pipe sewers were completed, as well as the construction of one single cart and four hand dumping depots, viz.,

18" sewer	1,480 r. ft.	with manholes and ventilating columns.			
15" "	1,281 "	do	do	do	do
12" "	831 "	do	do	do	do
9" "	100 "	do	do	do	do

(b) *Outfall works*.—During the year the new upward flow tank was completed and put into operation. The excavation of tank No. 10 and the raising and grading of the land around it was almost completed. Portions of this land were being brought under cultivation during the year.

The following works were also completed, viz.—

A second set of chowkidars' quarters and a moveable bridge over the Grant Khal.

A 2" tube well 207' deep, for drinking water for the staff.

Arrangements were in hand for the fencing in of the irrigation area to prevent the depredations of cattle belonging to surrounding cultivators.

(iv) *Dacca University sewerage scheme*.—During the year under review the main sewers in this area were completed through the laying of the following lengths of sewers, viz.—

9"	...	...	1,056 feet.
8"	...	...	225 "
6"	...	...	927 "

The combined receiving and pump well was completed and electric pumping plant consisting of two vertical spindle centrifugal pumps of 10,000 gallons per hour capacity each, direct coupled to motors, operated by float switches, was erected and made ready for test by the end of the year.

The rising main consisting of 1,180 feet of 9" Hume pipe was also laid and tested.

Five field latrines, with dumping chutes to serve the bungalows in the University were also completed.

In the meantime the University authorities have installed sanitary fittings throughout the University, and these will soon come into operation.

(v) *Narayanganj (East Bank) water-supply scheme*.—There has been considerable delay in this scheme owing to the contractors for the tube well going into liquidation.

A fresh contract was let to Messrs. Scott & Saxby who sank a fresh tube well which yielded 6,500 gallons per hour on test.

The water obtained contains iron, so an iron removal plant will have to be installed.

A contract for the steel rising main was let before the end of the year.

(vi) *South Chandpur water-supply*.—The whole of the distribution system was relaid during the year as the pipes were badly corroded. In some cases larger mains were substituted with a view to increasing the supply.

(vii) *Comilla water-supply*.—Two 5" tube wells were sunk to a depth of 305' during the year, and a new engine and pump were installed. A second new pump was being installed at the end of the year.

The water from these tube wells contains iron and arrangements were in hand at the close of the year for the installation of an aerator.

(viii) The following schemes were carried out for the installation of modern water-flush latrines in Government buildings during the year, viz.—

	Cost. Rs.
(a) Dacca Post Office and Postmaster's quarters	4,845
(b) Jagannath Intermediate College	15,156
(c) Dacca Islamic Intermediate College	6,017

(ix) *Kalimpong water-supply*.—Lining of a second portion of the Deola reservoir was taken up and completed during the year. The result of the lining is satisfactory, and leakage has been almost completely stopped.

(x) *Khulna water-supply improvement*.—Further extension of the distribution system which was taken in hand in the latter part of the previous year, was nearly completed. Fair progress was made with the construction of a new engine-house, filter and settling tanks. The new engines and pumps provided in the scheme were purchased.

(xi) *Patuakhali water-works*.—The excavation of the storage tank was completed. Laying of the distribution mains was nearing completion at the end of the year. The new engine and pump were purchased, and arrangements for the erection of a filter and elevated reservoir completed.

(xii) *Faridpur water-works*.—Construction of the engine house and staff quarters commenced about the close of the year. Materials for the elevated reservoir and filters, as well as the engine, were brought to site of work. Collection of materials for the necessary reinforced concrete work was completed. Progress of work on this scheme generally was satisfactory.

(xiii) *Pabna water-supply (emergent)*.—The tube well sunk in connection with the Pabna water-supply scheme was brought into use for an emergent supply to the town. A small pumping plant

to pump water from the well and four G. I tanks for storage of the water were installed. The arrangement proved satisfactory.

(xiv) *Tittaghur sewerage*.—Owing to the unsuitability of the land at the out-fall works to absorb sewage, it was decided to install an activated sludge plant of the simplex type for treatment of two-thirds of the dry weather flow the rest being treated by land. It was considered that the land would be able to absorb this portion of the effluent. A revised scheme estimated to cost Rs. 12,04,309 was accordingly drawn up. Beside the activated sludge plant, the revised scheme included new sewers and surface, drains and widening and construction of roads. This scheme was submitted to Government for sanction.

The installation of the activated sludge plant was taken up and nearly completed at the end of the year.

(xv) *Howrah water-supply improvement*.—The alterations to the engine-house were completed. Fair progress was made with the erection of the new filtered water pumping plant.

(xvi) *Naihati water-supply*.—This work was completed during the year and put into operation.

(xvii) *Bhatpara improvement scheme*.—This scheme was sanctioned towards the end of the year. Tenders for the supply of pipes for the water-supply scheme was called for in December. Good progress could not be made with the scheme for want of possession of land.

(xviii) *Burdwan water-works improvement*.—Repairs to the filters and replenishing the filtering materials of the same, extension of the engine-house and all other important works were completed. Some minor items of work were in progress towards the close of the year.

(xix) *Sanitation scheme for Reserved Police Lines at Burdwan*.—The jetty and some minor improvement and extension works for the water-supply and septic tank latrines were completed.

(xx) *Midnapore water-supply*.—Further extension of the distribution system was taken up and completed during the year. The experimental horizontal strainer on supply well No. 1 having proved successful in increasing its yield, a number of such strainers were fixed into the well. The result was

quite satisfactory. With a view to ensure the water-tightness of the elevated reservoir its inside was plastered with ironite. This proved very effective in stopping the leaks.

(xxi) *Raniganj water-supply*.—The distribution system was extended in certain portions of the town. Construction of the khalasis' quarters and some improvement works were taken in hand.

The inward flow of water into the supply well diminished in the early part of the dry weather due to the gradual consolidation of the sand at the bottom of the well. Eight small tube wells with filter points were driven down to the free sand below. The effect has been excellent, the total discharge being well above the maximum capacity of the pumps.

(xxii) *Suri water-supply*.—Construction of the drivers' and khalasis' quarters and extension of pipe-lines and some improvement works at the pumping station were completed. The erection of the elevated reservoir, and some minor works at the pumping station were in progress.

(xxiii) *Asansol water-supply*.—Good progress was made with the construction of the drivers' and khalasis' quarters. Excavation for the sump well and filtration gallery in the bed of the river Damodar was taken in hand.

(xxiv) *Kalimpong Bazar sewerage*.—Sanction to the scheme was received in October. Contract drawings and specifications for laying of sewers, construction of manholes, Jhora-crossings of sewers, public latrines, dumping depots, etc., were drawn up and a contract let. The order for supply of Hume pipe-sewers was placed, and the delivery of these commenced towards the close of the year.

(xxv) *Pitometer surveys*.—Sanction was obtained to the purchase of an apparatus, viz., a portable Pitometer, for locating leakages from the distribution mains of water-works and determining the amount of water wasted through them, and proposals for carrying out tests with the apparatus in the distribution systems of the older water-works were put forward to the municipalities concerned. Some of the municipalities accepted the proposal and Pitometer surveys were carried out at Burdwan and Narayanganj. The results of the tests were satisfactory and very helpful

in designing the improvement schemes for these water-works.

121. **Expenditure on new works.**—The total capital expenditure on water-works and sewerage works during the year were Rs. 4,79,876 and Rs. 1,94,617 respectively *vide* Appendices I and II.

122. **Maintenance of sewerage and water-works.**—(i) *Dacca sewerage*.—The management of the Outfall works and the operation of the Narinda Pumping Station continued to remain under the control of the department during the whole of the year. During the year ending 31st August 1928, the quantity of sewage and storm water pumped at the Narinda pumping station and dealt with at the outfall works was 698,179,580 gallons. The total cost of pumping including supervision was Rs. 14,265 or 32 annas per 1,000 gallons, which was defrayed by the municipality. The cost of disposal amounted to Rs. 10,400.

During the year more land was acquired and added to the irrigation area of the outfall works. The farming operations were carried on successfully and the produce of the farm brought in an income of Rs. 9,330 (approximately), which was an increase of Rs. 1,462 over the sale proceeds of the previous year.

A new development during the year was the sale of effluent to neighbouring cultivators for irrigating their crops.

When the outfall works were first put into operation there was considerable opposition from the cultivators adjoining the works, but after one or two years, working the results obtained on the irrigation area became evident and gradually they approached the department asking to be supplied, firstly with small, and later with large, quantities of effluent so that they would try the effect on their lands. In March 1928 the quantity thus supplied amounted to no less than 39 lakhs of gallons. It was then decided that the use of effluent was sufficiently well established to justify payment for effluent supplied to outside cultivators. In November and December the cultivators of five acres of land were supplied with effluent at Rs. 6 per acre per crop (i.e., three or four waterings as required). It is anticipated that when the next hot weather sets in, the demand will considerably increase.

This state of affairs is being given every encouragement, as apart from the slight increase in revenue, the day when further extensions to the irrigation area

will be required is being postponed thereby.

(ii) *Tittaghur sewerage and outfall works*.—Since the completion of the scheme in August 1927, the maintenance of the sewerage system, dumping depots, etc., and operation of the sewage pumping station including the management of the outfall works were under the control of this department up to 31st March 1928. The municipality took over the working of the pumping station from the beginning of April leaving the management of the outfall works in charge of the department. About 40 acres of land were brought under cultivation at the outfall works at a cost of Rs. 11,100-5. The produce of the farm during the year were sold at Rs. 1,121.

(iii) *Kalimpong water-works*.—The Kalimpong water-supply and the Kalimpong Bazar water-supply continued to be maintained by this department throughout the year. The supply was steady and the quality of the water good.

(iv) *Berhampore water-works*.—The management of the water-works remained under the control of the department up to 30th November after which it was retransferred to the Municipal Commissioners under orders of Government.

During the year under review a new oil engine and pumping set was purchased and erected on the barge for the river-side pumping station. This replaced the old steam pumping set. Thorough repairs were done to the Sisson engine and the whole machinery completely reconditioned.

(v) *General*.—(a) The monthly returns of the various sewerage and water-works were regularly checked and prompt steps taken to improve matters whenever cases of irregularities were noticed.

(b) The reports of Messrs. Worthington Simpson, Ltd., on their periodical inspections of the various water-works machinery and filters were closely scrutinised and forwarded to the local bodies concerned for necessary action, in some cases, with necessary additional remarks of the department.

(c) The services of the Mechanical Assistant Engineer and Mechanical Overseer of the department were requisitioned by the Rajbari and Khulna Municipalities for rectifying defects in their water-works machinery. At Rajbari the timely action of the Overseer averted an

apprehended breakdown of the water-works. The Overseer's services were also utilised by municipalities in the installation of chlorinating apparatus at their water-works.

(d) Reports on analysis of water issued by the Director of Bengal Public Health Laboratory and the medical Officer, Darjeeling, were regularly dealt with, and suitable measures taken to improve the quality of water in the cases of unsatisfactory results.

8. The total number of water-works in operation during the year remained the same as in the previous year. The total number of persons served was 1,007,526 and the total quantity of filtered water supplied was 12,822,981 gallons per day on an average.

9. The diagram in Appendix III shows the comparative figures for consumption of coal and fuel oil at the various water-works and sewage pumping stations in the Presidency during the year.

123. **Miscellaneous**.—(i) Contract drawings and specification for the Suri Drainage Scheme were prepared at the request of the Chairman and sent to the municipality.

(ii) The following estimates were prepared :—

	Amount of estimate. Rs.
(a) Pipe-laying in Mirbazar Street at Midnapore	3,270
(b) Pipe-laying in Sepoy Bazar Road up to College Road at Midnapore ..	3,937
(c) Khulna water-supply extension scheme—revised estimate ..	70,850
(d) Raniganj water-supply scheme—revised estimate	3,10,019
(e) Burdwan water-works improvement—revised estimate	1,48,712
(f) Patuakhali water-supply—revised estimate	77,679
(g) Maintenance and repairs to the Kalimpong D. I. Fund water-supply for the year 1928-29	1,500
(h) Improvement of the distribution system of the Kalimpong water-supply ..	1,100

(iii) At the request of the Education Department a detailed scheme, estimated to cost Rs. 49,763 for sanitation of the new and existing hostels attached to the Ahsanullah School of Engineering, was prepared.

(iv) A scheme for the construction of the Rilli Intake of the Kalimpong water-works was prepared and submitted to Government for sanction. The scheme is estimated to cost Rs. 12,450.

(v) At the request of the Pabna Municipality, plan and estimate amounting to Rs. 1,600 for an emergent water-supply from the tube well sunk for the water-supply scheme was prepared and sent to the Chairman.

(vi) At the request of the Kotrung Municipality, plan and estimate amounting to Rs. 9,200 for a joint drainage outfall of the Kotrung and Uttarpara Municipalities was prepared and sent to them.

(vii) At the request of the Executive Engineer, Public Works Department, Jalpaiguri Division, plans and estimates amounting to Rs. 8,000 for the installation of septic tank latrine at the Police Lines at Bogra were prepared and sent to him.

An alternative estimate amounting to Rs. 13,800 for the septic tank latrine with a tube well to provide water for flushing, as well as for all other purposes in the Police lines, was prepared and sent to the Executive Engineer.

(viii) At the request of the President, Union Board, Rampur Hat, a sketch project estimated to cost Rs. 8,800 for the drainage of the congested portion of the town of Rampur Hat, was prepared and sent to him.

(ix) A specification and bill of quantities for small tube wells to be sunk at District Police Thana was prepared at the request of the Superintendent of Police, Dacca District.

(x) At the instance of the District Board, 24-Parganas, temporary arrangements were made for supply of chlorinated water to the pilgrims congregating at Sagar Island on the occasion of the annual mela. The measure was as effective as in the previous years in preventing an outbreak

of cholera or any other water-borne diseases in an epidemic form amongst the pilgrims.

(xi) The three student engineers of the Bengal Engineering College, Sibpur, and the three student Overseers of the Ahsanullah School of Engineering, Dacca, who were taken in the previous year for practical training duly completed their course, and three new students from the former and seven students from the latter were admitted during the year under review.

(xii) Training in elementary sanitary engineering was given to the students of the Sanitary Inspectors' classes during the 22nd and 23rd sessions, and examinations held at the end of each session.

The new district public health organization scheme sanctioned in 1927 provided a wider field of employment for a larger number of sanitary inspectors and therefore greatly increased the popularity of the class. Each of the classes held during the year contained more than double the number of students attending the classes in any of the previous years.

(xiii) A note outlining a number of typical schemes for water-supply in villages where a tube well supply is possible, was drawn up for circulation among the various local bodies in the Province, including the local and union boards.

F. C. GRIFFIN,

M. INST. C. E., M.I.E. (IND.),

*Chief Engineer,
Public Health Department, Bengal.*

CALCUTTA :

The 1st March 1929.

APPENDIX I.

Statistics with regard to Municipal Water-works in Bengal, 1928.

No.	Name of Municipality.	Year of completion.	Area served.	Approximate population served.	Average daily supply in gallons.	Average daily supply per head of population in gallons.	Total capital expenditure up to 1928.	Total capital expenditure during 1928.	Annual cost of maintenance.	Cost of delivery of 1,000 gallons (working charges only).	Source of supply.	Type of filters employed.	Type of engines and pumps.
1		3	4	5	6	7	8	9	10	11	12	13	14
1	Barisal	1912	Sq. M. 3.50	27,000	109,265	4.04	Rs. 2,14,521	Rs. ..	Rs. 14,988	Annas. 5.40	River Barisal	Slow sand filters	Tandem compound surface-condensing engines and double acting pumps.
2	Berhampore	1899	6.00	26,670	276,940	10.38	3,72,248	93	33,950	4.89	River Bhagirathi	Ditto	Filtered Water Pumping Station.—Two compound horizontal condensing Duplex Worthington pumping engines, size 8" by 14" by 10" stroke. Diameter of plungers 8½" by 10" stroke. Two loco type boilers Nos. B. L. 6377 and 6383 of N. H. P. Unfiltered Water Pumping Station.—One Session High Speed Vandan compound non-condensing engine, size 5" by 8" by 4½" stroke direct coupled to one 8" Worthington slow speed Low Lift Centrifugal pump. One vertical Cochran boiler of the multitubular type.
3	Burdwan	1884	3.30	35,000	430,844	12.30	5,71,938	31,246	22,576	2.40	River Banka	Ditto	Two Tangye's Horizontal crude oil single cylinder 4-cycle cold starting type, with variable admission oil governing. Diameter of piston 16.233" by 22" stroke. Rated 77 B. H. P. Rev. per minute 210. Two 8" single stage low lift type Tangye's centrifugal pumps direct belt drive capacity of each 52,000 gallons per hour at 830 R.P.M. Two Tangye's Triplex single acting horizontal plunger pumps. Diameter of plungers 10" by 15" stroke. The shaft is coupled direct with the engine by a friction clutch and the pumps are driven through a single reduction, helical gearing. Capacity of each pump 47,000 gallons per hour. Three Suction and 3 Delivery valves on each pump diameter of valves 9½". Two steel cylindrical air compressor 5' by 1' 10" outside diameter. One Tangye's "AA" type oil engine, 2½" B. H. P. diameter of piston 4½" by 8" stroke single cylinder for workshop. One Lancashire boiler and one horizontal compound Worthington condensing steam engine with direct acting pump.
4	Dacca	1910	7.00	117,900	1,723,546	14.53	13,88,940	1,58,962	85,243	.51	River Buriganga	Jewell gravity filters	Two sets of Horizontal Worthington type expansion pumping engine, size of cylinders 9", 14", 22", and 18" stroke. Two direct acting Worthington Horizontal high and low lift pumps diameter of plungers 15" by 18" stroke. Two Babcock and Wilcox water tube boilers Nos. B. L. 6567 and 6565 grate area 19.15 sq. ft. N. H. P. 76, fitted with separator. Working pressure 160 lb. sq.
5	Howrah	1896	10.10	195,300	3,765,430	19.33	38,03,345	81,518	1,95,472	1.87	River Hooghly	Slow and filters	Two Vertical High Speed Vniflow engine, diameter of cylinders 18" by 10" stroke. One Worthington triplic expansion horizontal condensing engines, diameter of cylinder 12" by 19", 30" by 24" stroke. Two 20" Worthington low lift centrifugal pump. Two direct acting plunger pumps. Plungers 13½" diameter by 12" stroke. One Worthington Simpson double acting pump.

6	Mymensingh	1893	2·50	- 25,183	393,954	15·65	4,47,681	3,715	30,892	2·47	River Brahmaputra	Ditto	..	Plunger 18" diameter by 24" stroke. Three Lancashire boilers by Evans & Co., grate area 16·5 sq. ft. 70 H. P. One Lancashire boiler grate area 17 sq. ft. 70 H. P.
7	Narayanganj	1908	3·00	30,600	317,432	10·34	2,53,312	..	23,372	·31	River Sitalakhya	Jewell gravity filters	..	Three condensing compound engine and one triple expansion horizontal Worthington double acting high and low lift combined keeping steam engine.
8	Darjeeling	1917	4·85	23,000	630,137	30·12	6,32,697	2,639	7,957	0·54	30 Springs on Senchal Spur.	....	..	Two loco type boilers by Robey & Co. Grate area 8·9 sq. ft. N. H. P. 12, registered Nos. B. L. 6553 and 6554. Duplicate sets of Worthington Horizontal Triplex Expansion surface-condensing pumping engines Nos. 2841 and 2909. Diameter of cylinders 6" by 9" by 16" by 15" stroke. Duplicate sets of Worthington Horizontal double-acting H. L. and L. L. pumps, diameter of H. L. plunger 8½" and L. L. plunger 8½".
9	Kurseong	1913	2·00	5,000	150,000	30·00	1,10,241	....	13,385	3·11	Spring in the Forest of Sepoydhara.	Jewell pressure filters	..	For subsidiary service to St. Paul's School and three adjacent properties two 10 H. P. motors, one Recs. Roturbo pump and one Hayward Taylor duplicate plunger pump.
10	Khulna	1914	2·00	10,000	44,117	4·41	99,412	14,181	8,252	7·85	Reserved tank	Slow sand filters	..	Low lift from river to R. tank.—One Gyunne's centrifugal pump 2½" size driven by a black-stone spring injection type cold starting, and cycle, crude oil engine of 9 B. H. P. medium lift, unfiltered water from R. tank to the filter beds—one Worthington Duplex Horizontal piston pattern light service pump, size 5½" by 4½" by 5" stroke. High lift filtered water pumps, one 7½" by 7½" by 6" Worthington Horizontal Duplex piston pattern pump light service. One vertical boiler by Jessop & Co. N.H. P. 8. The Gyunne's centrifugal pump and the Black-stone crude oil engine were driven for some time in the head works as medium lift and high lift both.
11	Chandpur	1912	·093	6,000	12,982	2·11	32,309	4,726	4,702	10·82	River Meghna	Jewell pressure filters.	..	Two Horizontal Duplex Piston pattern non-condensing pumping engine size 6" diameter by 6" stroke. Diameter of pump plungers 4" by 10" stroke. Two vertical cross tube boilers by Marshall & Sons, B. L. Nos. 6576 and 6577, grate area 4·9 sq. ft., N. H. P. 5.
12	Munshigunge	1911	1·00	4,000	11,835	2·95	41,517	533	5,622	20·82	River Dhaleswari	Ditto	..	Horizontal Worthington Duplex pump.
13	Faridpur	1908	2·00	7,000	21,000	3·00	12,000	..	1,053	2·19	Reserved tank	Slow sand filters	..	Kite motion hand pump.
14	Perojpur	1913	0·50	2,233	1,600	·50	20,468	..	514	19·5	Ditto	Ditto	..	Ditto.
15	Patuakhali	1898	2·00	5,000	7,698	1·53	62,627	27,888	888	5·05	Ditto	Ditto	..	Evans No. 831, new design, single cylinder power pump with 3 B. H. P. Petter kerosine oil engine. Pumping capacity of the pump is 300 gallons per hour.
16	Jessore	1914	4·00	8,000	38,500	4·81	1,96,183	..	7,354	7·63	Ditto	Paterson's gravity filters.	..	Two Tangye kerosine oil engines of 12 B. H. P., diameter of cylinder 7½" by 14" stroke. Four cycle 260 R.P.M. Four 4" centrifugal pumps (Tangye).

No.	Name of Municipality.	Year of completion.	Area served.	Approximate population served.	Average daily supply in gallons.	Average daily supply per head of population in gallons.	Total capital expenditure up to 1928.	Total capital expenditure during 1928.	Annual cost of maintenance.	Cost of delivery of 1,000 gallons (working charges only).	Source of supply.	Type of filters employed.	Type of engines and pumps.
1		3	4	5	6	7	8	9	10	11	12	13	14
17	Hooghly-Chinsura	1914	Sq. M. 5.00	29,940	455,482	15.21	Rs. 6,20,459	Rs. ..	Rs. 24,009	Annas. 2.31	River Hooghly ..	Slow sand filters ..	Two Worthington Horizontal triple expansion surface condensing engines, diameter of cylinder 8" by 12" by 20" by 15" stroke. Two vertical high speed compound Sission engines, size of cylinders 5½" by 9" dia. by 6" stroke. Three Babcock and Wilcox boiler, 343 sq. ft., heating surface each 150 lbs. working pressure. Two 10" medium lift centrifugal pumps. Two Worthington Horizontal double acting plunger pumps, diameter of plungers 14½" by 15" stroke.
18	Serampore ..	1914	1.62	33,200	287,183	8.68	3,07,373	8,839	38,049	5.63	Ditto ..	....	Two filtered water engine and pump with enlarged steam ends and 2 cornish boilers, 2 donkey pumps and 1 Worthington pump for feed water.
19	Bankura ..	1916	2.5	17,935	106,218	5.92	1,15,792	2,068	6,087	1.84	Filtration gallery in the bed of river Gangeswari.	....	Semi-Diesel oil engines with horizontal Duplex pumps.
20	Chittagong ..	1916	4.25	40,000	488,030	12.20	3,75,876	9,722	47,237	3.7	Bore holes ..	Paterson's iron eliminating plant and filters.	Two horizontal triple expansions condensing fly-wheel engines, double acting plunger pumps for high lift, air compressor for low lift.
21	Naihati ..	1911	1.68	23,300	186,139	7.98	1,80,542	30,071	..	..	Supplied from local mills.	Mechanical gravity filters.	Two sets of centrifugal pumps consisting of three in each set, driven by two Tangye's Patent Semi-Diesel crude oil engines.
22	Bhatpara ..	1906	1.50	46,000	92,000	2.00	32,932	649	..	..	
23	Tittaghur ..	1905	1.50	52,454	1,557,500	29.69	17,929	..	..	..
24	Garulia ..	1904	1.00	12,000	187,152	15.51	9,098	508	..	..	
25	Bhadreswar ..	..	1.77	20,000	213,000	10.00	..	..	..	..
26	Chandpandey ..	..	4.80	26,500	363,465	13.71	..	..	..	..	Supplied from Calcutta Water-Works.	Jewell pressure filter	One Worthington Ingico oil engine of 4 B. H. P. of "W" type, diameter of cylinder 4½" by 7" stroke and the other Worthington Ingico oil engine 4 B. H. P. of "AL" type, diameter of cylinder 4½" by 9" stroke. Two Worthington "A" type horizontal single double acting power pumps, diameter of plungers 6" by 6" stroke. Capacity of each pump per hour 3,000 gallons.
27	Baranagore ..	1918	0.82	8,000	26,312	3.28	15,173	..	5,533	9.93			
28	Tollygunge ..	1909	5.75	21,700	53,470	2.46	65,137	3,809	6,331	1.63			
29	South Suburban ..	1904	3.00	17,000	35,591	2.09	66,077	432	4,068	5.01	River Hooghly ..	Mather Platt's and mechanical pressure filters.	Mather and Platt's turbine centrifugal pump of 4,000 gallons per hour capacity. Counter-shaft driven belt driven by two Campbell's crude oil engines of 9 B. H. P. each; one is of hot bulb type and the other cold starting by hand type. One chemical pump, plunger type for pumping coagulant.
30	Uttarpara ..	1918	0.75	8,666	99,125	11.43	1,91,559	18	11,900	4.73	Reserved tank and tube well.		
31	Nator ..	1919	1.60	7,000	20,962	2.99	1,04,492	3,951	4,324	7.78	Reserved tank ..	Mather Platt's and mechanical pressure filters.	Mather and Platt's turbine centrifugal pump of 4,000 gallons per hour capacity. Counter-shaft driven belt driven by two Campbell's crude oil engines of 9 B. H. P. each; one is of hot bulb type and the other cold starting by hand type. One chemical pump, plunger type for pumping coagulant.
32	Satkhira ..	1919	2.50	7,500	11,644	1.54	79,445	860	3,086	9.91	Reserved tank ..		

33	Rajbari	..	1919	0.75	3,000	16,500	5.16	63,908	3,841	3,356	7.98	Reserved tank and tube well.	Jewell pressure filter	One Tangye's "A. A." oil engine of 1½" B. H. P. and 3 B. H. P. Petters. Two cycle kerosine oil engine. Two 5" by 5" "A" type double acting horizontal Worthington single power pumps, capacity 1,500 gallons per hour.
34	Noakhali	..	1920	..	2,500	4,550	1.82	37,172	..	2,253	.68	Reserved tank	Chlorinating apparatus.	One vertical boiler and one Worthington Duplex non-condensing pump.
35	Kalimpong	..	1922	1.50	7,216	78,693	10.90	7,75,892	3,186	4,710	2.62	River Rilli	....	Gravity supply.
36	Krishnagar	..	1922	7.00	22,300	130,000	5.82	4,07,514	..	16,995	5.73	River Jalangi	Jewell mechanical gravity filter.	Two Ransomes, Sims and Jefferies Semi-Diesel engines, 15 B. H. P. each. Four cycle diameter of cylinder 8½" by 14" stroke. One Ransomes, Sims & Jefferies Semi-Diesel engine 10 B. H. P. Four cycle diameter of cylinder 6¾" by 13" stroke. Two Worthington 2½" high lift centrifugal pumps, two Worthington 3" medium lift pump and one 6" Worthington centrifugal pump.
37	Midnapore	..	1926	3.00	24,100	270,000	11.20	5,39,062	100	13,507	1.72	Well on the bed of river Cossye.	....	Forty-two B. H. P. Campbell crude oil engines driving vertical treble ram pumps.
38	Comilla	..	1925	2.58	25,914	56,328	2.17	3,94,554	12,263	13,624	10.35	Reserved tank and tube well.	Paterson's pressure filter.	Three Campbell Gas Engineering Co.'s high compression type oil engine and centrifugal pumps, two for high lift and one for low lift, also one Campbell Gas Engineering Co.'s high compression cold starting type engine and one triplex Ram pump for high lift.
39	Raneegunge	..	1927	1.80	14,450	90,363	6.25	3,23,906	22,266	8,934	3.61	Well in the bed of river Damodar.	....	Two Campbell compression crude oil engine of the Horizontal single cylinder ordinary cold starting type 23/26 B. H. P. each. Two Campbell vertical treble Ram water pumps capacity 12,500 per hour. Diameter of plungers 8½" by 10" stroke direct belt driven.
40	Suri	..	1927	3.00	8,915	56,989	6.39	1,89,774	51,800	5,075	3.64	River Mourakhi	Gravity filters	Two three throw Ram pumps of 7,500 gallons capacity each, driven by two 15.5 H. P. Campbell high compression horizontal heavy oil engines.
					1,007,526	12,822,981			4,79,876					
									1,31,73,113					

APPENDIX II.

Total expenditure on Drainage and Sewerage Works in the Municipalities in Bengal up to 31st December 1928.

No.	Name of municipality.	Area served.	Approximate population served.	Total capital cost up to 31st December 1928.	Total capital expenditure during 1928.	Annual cost of main-tenance.
1	2	3	4	5	6	7
		Sq. mile.		Rs.	Rs.	Rs.
1	Darjeeling ..	4·85	22,958	1,56,515	732	3,717
2	Howrah ..	2·82	93,566	13,06,755	29,961	85,626
3	Burdwan ..	4·00	28,000	1,80,327	960	3,957
4	Kurseong ..	2·00	4,000	2,53,329	..	10,923
5	Khulna ..	1·00	8,000	13,916	654	..
6	Bhatpara ..	3·70	50,000	2,09,398	2,343	9,370
7	Tittaghur ..	1·50	52,454	10,92,456	49,560	8,912
8	Garulia ..	1·13	12,000	52,566	..	74
9	Budge-Budge ..	2·00	5,612	80,591	996	1,177
10	Basirhat ..	8·50	19,268	9,826	250	..
11	Baraset ..	3·50	5,500	24,809	..	348
12	Baruipur ..	1·20	4,508	17,209	..	..
13	Baranagore ..	0·82	17,750	68,482	564	3,065
14	Krishnagar ..	..	16,000	28,000	..	..
15	Berhampore ..	6·00	26,670	53,314	1,135	3,333
16	English Bazar ..	2·00	11,000	30,155	441	412
17	Ranaghat ..	1·50	8,000	43,301	308	675
18	Kustia ..	0·55	5,000	35,364	..	935
19	Utterpara ..	0·38	2,300	19,434	1,570	57
20	Chandpur ..	0·059	2,450	1,723	..	1,282
21	Bankura ..	·04	4,000	10,002	..	..
22	Katwa ..	1·00	6,822	55,709	708	1,191
23	Bhadreswar ..	0·25	10,000	27,543	1,152	557
24	Tangail ..	2·19	3,000	22,052	..	349
25	Champdany ..	3·75	22,500	1,06,141	..	..
26	Serampore ..	0·016	1,000	19,093	844	86
27	Dacca ..	2·10	65,000	23,63,272	1,02,439	21,037
28	Rangpur ..	..	..	*91,591	..	..
29	Jangipur ..	3·00	11,000	47,254	..	..
30	Narayanganj ..	0·02	2,500	3,029	..	..
				64,23,156	1,94,617	

* Reconstruction of Goghat Bridge.

APPENDIX III

WATER WORKS AND SEWERAGE PUMPING STATIONS IN BENGAL. DIAGRAM SHOWING CONSUMPTION OF COAL PER PUMP HORSE POWER HOUR, 1928

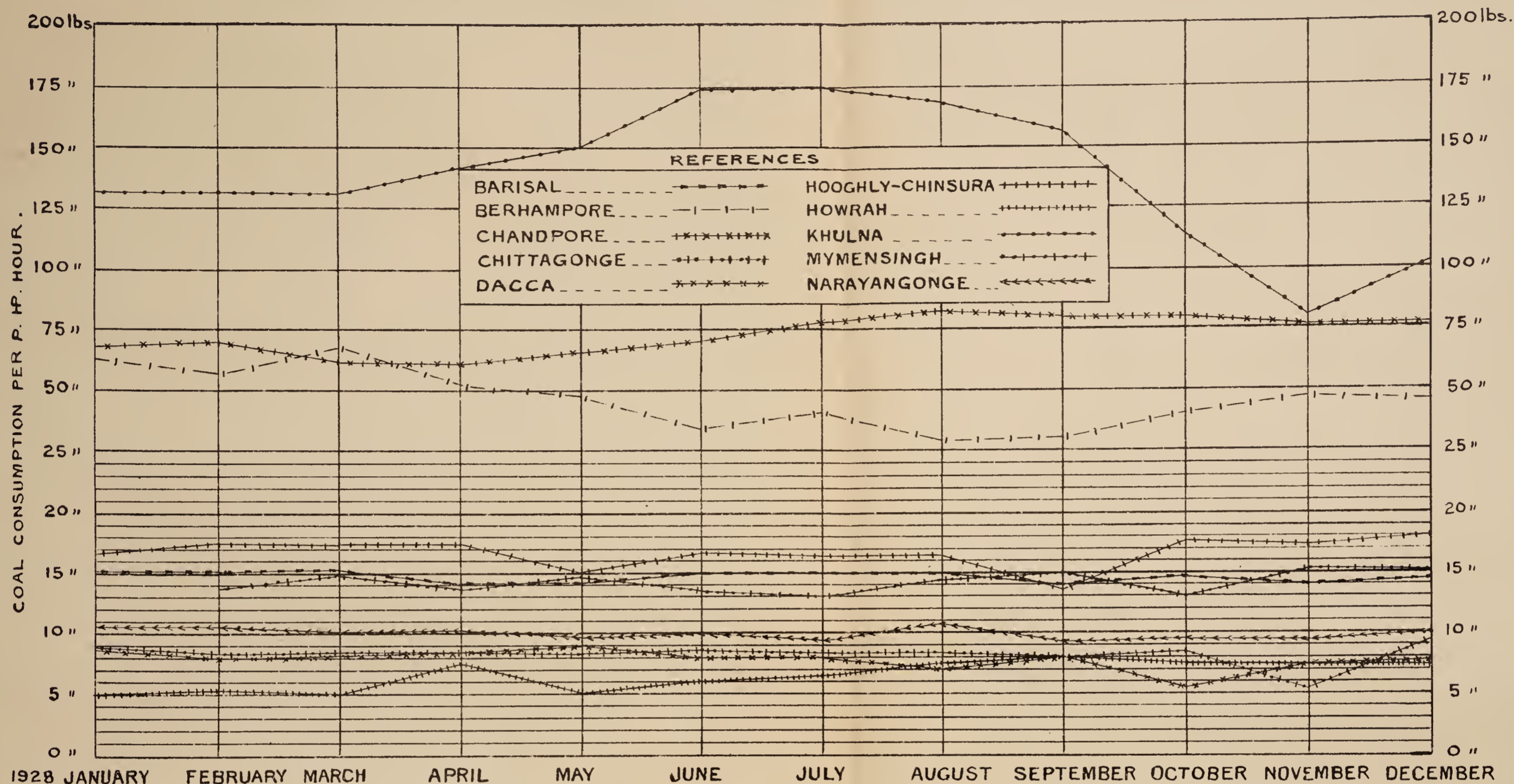
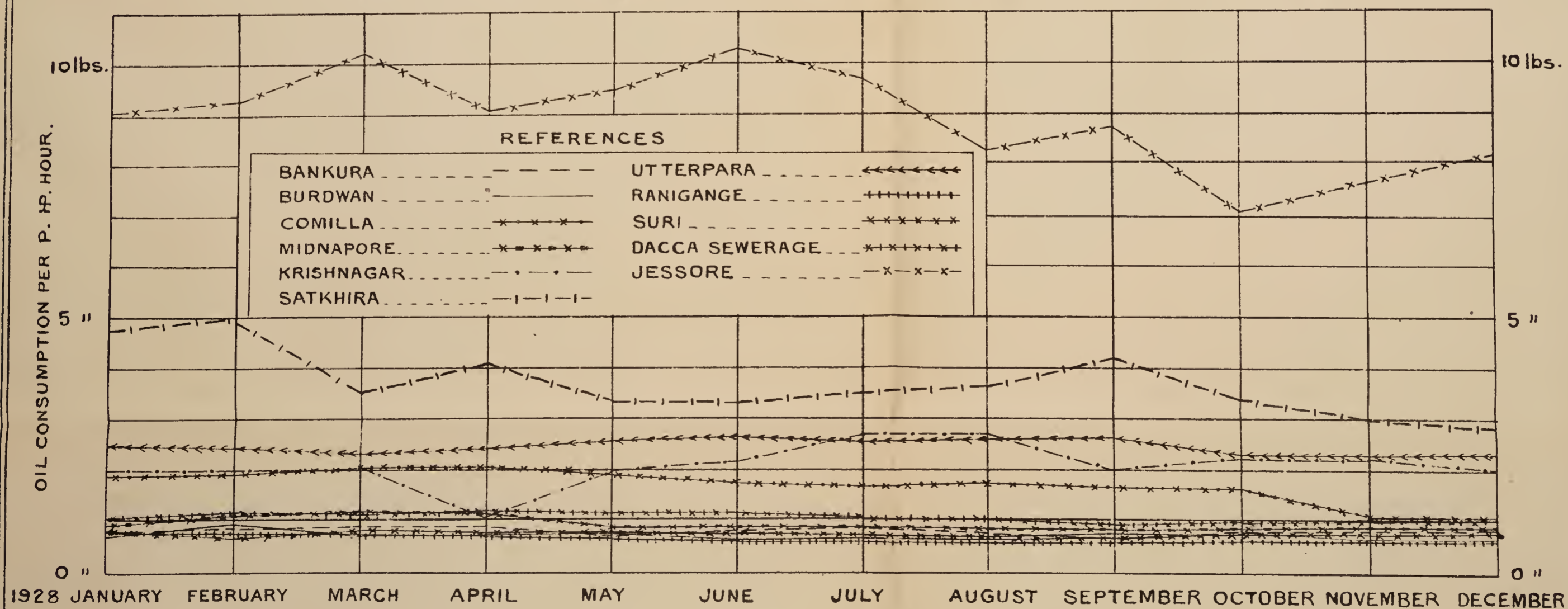


DIAGRAM SHOWING CONSUMPTION OF OIL PER PUMP HORSE POWER HOUR



Part IV
Appendices

Appendix I

Vital Statistics of the Districts of Bengal

For the year 1928

Annual Form No. I.—BIRTHS registered in the

1 No.	2 Districts.	3 Population according to Census of 1921.			4 Number of births registered (exclusive of still-births).		
		Male.	Female.	Total.	Male.	Female.	Total.
	<i>Burdwan Division.</i>						
1	Burdwan ..	732,369	706,557	1,438,926	21,581	20,055	41,636
2	Birbhum ..	422,986	424,584	847,570	16,292	15,470	31,762
3	Bankura ..	509,334	510,607	1,019,941	18,123	17,091	35,214
4	Midnapur ..	1,339,652	1,327,008	2,666,660	41,056	38,792	79,848
5	Hooghly ..	561,268	518,874	1,080,142	14,375	13,135	27,510
6	Howrah ..	535,151	462,252	997,403	14,798	12,956	27,754
	<i>Presidency Division.</i>						
7	24-Parganas ..	1,324,060	1,134,732	2,458,792	34,286	30,627	64,913
8	Calcutta ..	724,248	353,016	1,077,264	11,580	10,421	22,001
9	Nadia ..	761,345	726,227	1,487,572	25,295	23,894	49,189
10	Murshidabad ..	628,742	633,772	1,262,514	27,459	25,748	53,207
11	Jessore ..	893,592	828,627	1,722,219	20,630	18,796	39,426
12	Khulna ..	757,524	695,510	1,453,034	24,276	22,587	46,863
	<i>Rajshahi Division.</i>						
13	Rajshahi ..	767,370	722,305	1,489,675	24,035	23,129	47,164
14	Dinajpur ..	896,400	808,953	1,705,353	31,486	29,601	61,087
15	Jalpaiguri ..	503,397	432,872	936,269	16,435	15,433	31,868
16	Darjeeling ..	149,094	133,654	282,748	5,498	4,838	10,336
17	Rangpur ..	1,316,840	1,191,014	2,507,854	41,573	38,155	79,728
18	Bogra ..	538,727	509,879	1,048,606	15,599	14,288	29,887
19	Pabna ..	706,702	682,792	1,389,494	16,686	14,721	31,407
20	Malda ..	492,822	492,843	985,665	17,154	15,726	32,880
	<i>Dacca Division.</i>						
21	Dacca ..	1,572,220	1,553,747	3,125,967	49,490	45,276	94,766
22	Mymensingh ..	2,510,450	2,327,280	4,837,730	67,937	62,066	130,003
23	Faridpur ..	1,147,742	1,102,116	2,249,858	36,210	32,350	68,560
24	Bakarganj ..	1,343,163	1,280,593	2,623,756	38,704	35,033	73,737
	<i>Chittagong Division.</i>						
25	Chittagong ..	777,882	833,540	1,611,422	24,653	22 043	46,696
26	Noakhali ..	738,722	734,064	1,472,786	25,818	23,146	48,964
27	Tippera ..	1,406,134	1,336,939	2,743,073	36,557	32,717	69,274
	Total for the Bengal Presidency ..	24,057,936	22,464,357	46,522,293	717,586	658,094	1,375,680

districts of the Bengal Presidency during the year 1928.

5			6	7	8	9		
Ratio of births per 1,000 of population.			Number of males born to every 100 females born.	Excess of births over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.		
Male.	Female.	Total.				Male.	Female.	Total.
15·0	13·9	28·9	107	2·8	..	15·7	14·6	30·3
19·2	18·2	37·5	105	7·9	..	20·1	19·2	39·3
17·8	16·7	34·5	106	11·0	..	18·1	17·1	35·2
15·4	14·5	29·9	105	6·0	..	14·6	13·9	28·6
13·3	12·2	25·5	109	..	0·3	13·3	12·2	25·6
14·8	13·0	27·8	114	1·7	..	14·3	13·0	27·4
13·9	12·5	26·4	111	3·9	..	10·2	9·2	19·5
10·7	9·7	20·4	111	..	11·3	9·1	8·1	17·3
17·0	16·1	33·1	106	3·9	..	17·6	16·4	34·0
21·7	20·4	42·1	106	12·8	..	21·5	20·4	41·9
12·0	10·9	22·9	109	..	7·0	13·9	12·8	26·8
16·7	15·5	32·2	107	9·7	..	14·8	13·7	28·5
16·1	15·5	31·6	103	..	1·5	16·9	16·0	32·9
18·5	17·3	35·8	106	1·3	..	18·2	17·1	35·4
17·5	16·5	34·0	106	5·6	..	16·5	15·7	32·2
19·4	17·1	36·5	113	5·1	..	17·1	16·3	33·4
16·6	15·2	31·8	108	3·7	..	15·3	14·1	29·4
14·9	13·6	28·5	109	6·2	..	12·7	11·8	24·5
12·0	10·6	22·6	113	0·4	..	13·5	12·2	25·7
17·4	16·0	33·4	109	5·7	..	17·6	16·4	34·0
15·8	14·5	30·3	109	5·9	..	14·3	13·2	27·5
14·0	12·8	26·9	109	5·4	..	13·4	12·3	25·8
16·1	14·4	30·5	111	3·7	..	15·4	14·0	29·4
14·8	13·3	28·1	110	4·2	..	15·3	14·0	29·4
15·3	13·7	29·0	111	..	0·4	15·9	14·2	30·1
17·5	15·7	33·2	111	8·1	..	17·0	15·4	32·4
13·3	11·9	25·2	111	8·2	..	11·6	10·5	22·2
15·4	14·1	29·6	109	4·1	..	15·0	13·8	28·8

Annual Form No. II.—BIRTHS AND DEATHS registered in the

1 Number.	2 Districts.	3 Area in square miles.	4 Average population per square mile.	5 Population (Census, 1921).			6 Births.				Male.
				Male.	Female.	Total.	Male.	Female.	Total.	Birth-rate per 1,000 of population.	
<i>Burdwan Division.</i>											
1	Burdwan	2,703	532	732,369	706,557	1,438,926	21,581	20,055	41,636	28·9	19,291
2	Birbhum	1,753	483	422,986	424,584	847,570	16,292	15,470	31,762	37·5	12,799
3	Bankura	2,625	388	509,334	510,607	1,019,941	18,123	17,091	35,214	34·5	12,391
4	Midnapur	5,055	528	1,339,652	1,327,008	2,666,660	41,056	38,792	79,848	29·9	32,352
5	Hooghly	1,188	909	561,268	518,874	1,080,142	14,375	13,135	27,510	25·5	13,904
6	Howrah	530	1,882	535,151	462,252	997,403	14,798	12,956	27,754	27·8	13,631
<i>Presidency Division.</i>											
7	24-Parganas ..	4,845	507	1,324,060	1,134,732	2,458,792	34,286	30,627	64,913	26·4	29,354
8	Calcutta	30	35,174	724,248	353,016	1,077,264	11,580	10,421	22,001	20·4	18,781
9	Nadia	2,778	535	761,345	726,227	1,487,572	25,295	23,894	49,189	33·1	22,356
10	Murshidabad ..	2,121	595	628,742	633,772	1,262,514	27,459	25,748	53,207	42·1	19,455
11	Jessore	2,904	583	893,592	828,627	1,722,219	20,630	18,796	39,426	22·9	26,802
12	Khulna	4,730	307	757,524	695,510	1,453,034	24,276	22,587	46,863	32·2	16,743
<i>Rajshahi Division.</i>											
13	Rajshahi	2,620	569	767,370	722,305	1,489,675	24,035	23,129	47,164	31·6	25,422
14	Dinajpur	3,946	432	896,400	808,953	1,705,353	31,486	29,601	61,087	35·8	30,645
15	Jalpaiguri	2,931	319	503,397	432,872	936,269	16,435	15,433	31,868	34·0	13,890
16	Darjeeling	1,164	243	149,094	133,654	282,748	5,498	4,838	10,336	36·5	4,716
17	Rangpur	3,496	717	1,316,840	1,191,014	2,507,854	41,573	38,155	79,728	31·8	35,783
18	Bogra	1,379	760	538,727	509,879	1,048,606	15,599	14,288	29,887	28·5	11,777
19	Pabna	1,678	828	706,702	682,792	1,389,494	16,686	14,721	31,407	22·6	15,874
20	Malda	1,833	538	492,822	492,843	985,665	17,154	15,726	32,880	33·4	14,554
<i>Dacca Division.</i>											
21	Dacca	2,723	1,148	1,572,220	1,553,747	3,125,967	49,490	45,276	94,766	30·3	38,916
22	Mymensingh ..	6,238	77	2,510,450	2,327,280	4,837,730	67,937	62,066	130,003	26·9	53,259
23	Faridpur	2,371	949	1,147,742	1,102,116	2,249,858	36,210	32,350	68,560	30·5	31,258
24	Bakarganj	3,490	752	1,343,163	1,280,593	2,623,756	38,704	35,033	73,737	28·1	32,721
<i>Chittagong Division.</i>											
25	Chittagong	2,497	645	777,882	833,540	1,611,422	24,653	22,043	46,696	29·0	24,083
26	Noakhali	1,515	972	738,722	734,064	1,472,786	25,818	23,146	48,964	33·2	18,459
27	Tippera	2,560	1,072	1,406,134	1,336,939	2,743,073	36,557	32,717	69,274	25·2	24,178
Total for the Bengal Presidency ..		71,703	648	24,057,936	22,464,357	46,522,293	717,586	658,094	1,375,680	29·6	613,394

districts of the Bengal Presidency during the year 1928.

7		8	9											10			11
Deaths.		Num-ber of male deaths to every 100 female deaths.	Deaths per 1,000 of population from—											Mean ratio of deaths per 1,000 during pre-vious five years.			Number.
Female.	Total.		Cholera.	Small-pox.	Plague.	Fever.	Dysen-tery and diar-rhoea.	Res-pira-tory diseases	Injury.	All other causes.	All causes.			Male.	Female	Total..	
											Male.	Female.	Total.				
18,285	37,576	105	2·4	·8	·0006	16·8	·9	1·8	·5	2·8	26·3	25·9	26·1	26·0	25·0	25·5	1
12,260	25,059	104	2·4	·4	..	21·9	·3	·9	·5	3·3	30·3	28·9	29·6	28·7	26·8	27·8	2
11,595	23,986	106	·5	·1	..	15·0	1·0	1·8	·5	4·5	24·3	22·7	23·5	26·2	24·1	25·2	3
31,486	63,838	102	2·3	1·4	..	14·5	·6	·8	·5	3·8	24·1	23·7	23·9	24·3	23·7	24·0	4
14,018	27,922	99	2·3	·7	..	14·7	1·7	2·4	·6	3·4	24·8	27·0	25·8	25·2	23·1	25·1	5
12,431	26,062	109	4·5	·3	..	8·8	3·3	3·9	·7	4·6	25·5	26·9	26·1	25·7	26·7	26·2	6
26,098	55,452	112	5·1	·4	..	10·9	·7	1·2	·6	3·4	22·2	23·0	22·5	23·5	23·6	23·5	7
15,338	34,119	122	2·4	·5	·004	4·4	3·4	9·9	·6	10·4	25·9	43·4	31·7	25·6	42·2	31·0	8
21,023	43,379	106	3·5	·8	..	19·6	·3	1·0	·5	3·3	29·4	28·9	29·2	30·9	30·0	30·3	9
17,586	37,041	110	3·2	2·1	..	18·2	·1	·2	·6	4·8	30·9	27·7	29·3	31·9	29·3	30·6	10
24,787	51,589	108	2·5	·1	..	24·2	·1	·2	·5	2·3	30·0	29·9	29·9	28·8	27·4	28·2	11
15,966	32,709	104	2·8	·05	..	12·8	·4	·6	·6	5·2	22·1	22·9	22·5	25·3	24·3	24·8	12
23,979	49,401	106	4·4	·5	..	23·8	·1	·1	·5	3·6	33·1	33·2	33·2	34·7	33·2	34·0	13
28,117	58,762	109	·9	1·0	..	30·3	·1	·2	·4	1·7	34·2	34·8	34·5	33·3	32·6	33·0	14
12,720	26,610	109	·5	·1	..	23·1	1·0	1·3	·2	2·1	27·6	29·4	28·4	28·5	28·6	28·5	15
4,178	8,894	112	·4	·1	..	21·1	1·9	1·9	·3	5·8	31·6	31·3	31·4	32·1	31·8	32·0	16
34,771	70,554	102	2·0	·9	·0003	23·1	·4	·3	·3	1·1	27·2	29·2	28·1	29·4	28·2	28·8	17
·11,592	23,369	101	1·9	1·8	..	15·3	·4	·4	·5	2·0	21·9	22·7	22·3	24·8	23·1	23·9	18
14,950	30,824	106	3·1	·5	..	16·0	·2	·2	·4	1·8	22·5	21·9	22·2	27·6	25·1	26·4	19
12,642	27,196	115	1·1	3·3	..	20·1	·05	·1	·3	2·6	29·5	25·6	27·6	28·9	25·5	27·2	20
37,495	76,411	103	4·2	2·2	..	11·4	1·2	·8	·3	4·3	24·7	24·1	24·4	22·1	19·9	21·0	21
50,812	104,071	104	3·3	1·0	..	12·7	·5	·2	·2	3·5	21·2	21·8	21·5	21·9	21·1	21·5	22
29,027	60,285	107	4·3	1·0	..	15·5	1·0	1·1	·3	3·5	27·2	26·3	26·8	25·3	23·3	24·3	23
30,139	62,860	108	2·9	·1	..	14·4	·4	·1	·5	5·4	24·4	23·5	23·9	26·2	23·9	25·1	24
23,242	47,325	103	2·7	2·5	..	21·9	·4	·2	·6	1·1	30·9	27·9	29·4	24·9	21·7	22·6	25
18,588	37,047	99	3·7	·3	..	16·3	·6	·1	·6	3·5	25·0	25·3	25·1	24·9	23·4	24·2	26
22,496	46,674	107	2·4	·9	..	9·8	·6	·3	·2	2·8	17·2	16·8	17·0	17·8	16·3	17·0	27
575,621	1,189,015	106	2·9	·9	·0001	16·1	·7	·9	·4	3·5	25·5	25·6	25·5	25·8	24·7	25·3	

Annual Form No. III.—DEATHS registered in the districts of the Bengal Presidency during each month of the year 1928.

1 Number.	2 Districts.	3												4 Total deaths registered during the year 1928.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
	<i>Burdwan Division.</i>													
1	Burdwan ..	4,134	3,871	5,071	3,855	3,384	2,324	2,399	2,654	2,431	2,047	2,541	2,865	37,576
2	Birbhum ..	2,646	2,049	2,480	2,421	2,449	1,921	1,826	2,045	1,585	1,669	2,007	1,961	25,059
3	Bankura ..	1,796	1,465	2,195	2,233	1,813	1,677	1,801	1,946	1,645	1,682	3,448	2,285	23,986
4	Midnapur ..	5,785	5,878	6,277	6,621	5,615	3,789	4,037	4,549	4,115	4,656	5,639	6,877	63,838
5	Hooghly ..	3,589	1,846	2,352	2,272	2,733	2,795	2,154	1,915	1,960	1,778	2,140	2,388	27,922
6	Howrah ..	2,807	2,650	2,672	3,031	2,172	1,693	1,828	1,689	1,567	1,744	1,968	2,241	26,062
	<i>Presidency Division.</i>													
7	24-Parganas ..	7,129	5,675	7,011	4,767	4,004	3,439	3,512	3,548	3,397	3,547	3,969	5,454	55,452
8	Caleutta ..	3,431	2,898	3,621	3,248	3,075	2,612	2,549	2,438	2,174	2,379	2,887	2,807	34,119
9	Nadia ..	5,928	3,900	3,810	4,687	3,378	2,338	2,111	2,241	2,707	3,106	4,152	5,021	43,379
10	Murshidabad ..	4,141	3,419	4,087	4,236	3,247	2,477	2,981	2,250	2,265	2,348	2,614	2,976	37,041
11	Jessore ..	6,900	4,218	4,654	4,330	3,648	2,402	2,350	2,350	2,863	3,534	5,749	8,591	51,589
12	Khulna ..	4,304	2,972	2,979	2,776	2,125	1,694	1,940	1,976	2,048	2,514	3,110	4,271	32,709
	<i>Rajshahi Division.</i>													
13	Rajshahi ..	6,048	3,709	4,982	7,264	4,138	2,263	2,681	2,379	3,142	3,740	3,849	5,206	49,401
14	Dinajpur ..	5,876	4,380	4,484	5,012	4,687	3,501	3,887	3,547	3,701	6,027	5,876	7,834	58,762
15	Jalpaiguri ..	2,290	1,547	1,734	2,293	2,603	2,024	2,320	1,971	1,828	2,337	2,517	3,146	26,610
16	Darjeeling ..	707	479	626	852	740	858	887	755	677	740	721	852	8,894
17	Rangpur ..	6,279	4,151	3,104	4,403	5,242	5,630	5,414	4,729	6,678	7,627	8,661	8,636	70,554
18	Bogra ..	2,427	1,920	1,623	1,618	1,756	1,318	1,560	1,689	1,866	2,127	2,921	2,544	23,369
19	Pabna ..	3,976	2,317	2,274	3,505	2,349	1,561	1,398	1,018	1,296	2,790	4,436	3,904	30,824
20	Malda ..	3,102	1,777	2,554	3,542	3,039	2,267	1,995	1,444	1,375	1,905	1,913	2,283	27,196
	<i>Dacca Division.</i>													
21	Dacca ..	7,856	4,480	5,961	10,272	6,882	4,093	3,969	4,103	4,971	6,202	8,618	9,004	76,411
22	Mymensingh ..	12,500	6,970	6,930	9,183	8,328	6,580	6,531	4,970	6,272	9,370	11,394	15,043	104,071
23	Faridpur ..	6,571	4,444	6,451	7,520	4,309	2,951	2,923	3,030	3,639	4,234	6,258	7,955	60,285
24	Bakarganj ..	8,309	5,101	6,620	7,522	5,802	3,698	4,067	2,921	3,073	4,177	4,820	6,750	62,860
	<i>Chittagong Division.</i>													
25	Chittagong ..	5,158	3,699	3,951	5,451	4,562	3,771	4,886	3,466	2,994	3,193	2,544	3,650	47,325
26	Noakhali ..	4,607	2,758	3,023	3,407	3,373	2,977	3,454	2,468	2,221	2,624	2,557	3,578	37,047
27	Tippera ..	5,043	4,330	4,799	5,095	3,890	3,099	3,002	2,657	2,578	3,488	4,081	4,612	46,674
	Total for the Bengal Presidency ..	133,339	92,903	106,275	121,416	99,343	75,752	78,462	70,748	75,068	91,585	111,390	132,734	1,189,015
	Ratio of deaths per 1,000 of population	2·9	2·0	2·3	2·6	2·1	1·6	1·7	1·5	1·6	2·0	2·4	2·8	25·5

Annual Form No. IV

Annual Form No. IV.—Deaths registered according to AGE in the

Number.	2		3												4	
	Districts.		Under one year.												One year and under 5 years.	
			Under one month.			Between 1 and 6 months.			Between 6 and 12 months.			Total.				
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.			
	Burdwan Division.															
1	Burdwan	..	2,877	2,278	5,155	862	744	1,606	500	505	1,005	4,239	3,527	7,766	1,845	1,806
2	Birbhum	..	2,265	1,772	4,037	654	592	1,246	400	390	796	3,319	2,760	6,079	1,687	1,618
3	Bankura	..	2,317	1,841	4,158	620	550	1,170	330	306	636	3,267	2,697	5,964	1,195	1,275
4	Midnapur	..	3,867	3,411	7,278	1,418	1,355	2,773	935	981	1,916	6,220	5,747	11,967	3,299	3,360
5	Hooghly	..	1,741	1,436	3,177	612	585	1,197	317	338	655	2,670	2,359	5,029	1,333	1,356
6	Howrah	..	1,705	1,320	3,025	773	715	1,488	463	432	895	2,941	2,467	5,408	1,666	1,553
	Presidency Division.															
7	24-Parganas	..	2,888	2,358	5,246	1,414	1,161	2,575	731	698	1,429	5,033	4,217	9,250	3,414	3,341
8	Calcutta	..	1,783	1,457	3,240	530	492	1,022	898	909	1,807	3,211	2,858	6,069	1,725	1,588
9	Nadia	..	3,232	2,736	5,968	1,192	1,146	2,338	903	932	1,835	5,327	4,814	10,141	2,229	2,355
10	Murshidabad	..	2,870	2,190	5,060	1,194	1,028	2,222	684	677	1,361	4,748	3,895	8,643	2,790	2,819
11	Jessore	..	1,692	1,418	3,110	1,183	1,204	2,387	729	778	1,507	3,604	3,400	7,004	3,445	3,487
12	Khulna	..	2,702	2,296	4,998	1,294	1,057	2,351	550	581	1,131	4,546	3,934	8,480	1,784	1,738
	Rajshahi Division.															
13	Rajshahi	..	2,571	2,225	4,796	1,205	1,161	2,366	1,222	1,213	2,435	4,998	4,599	9,597	2,925	2,863
14	Dinajpur	..	3,646	3,308	6,954	1,896	1,652	3,548	1,300	1,156	2,456	6,842	6,116	12,958	3,989	3,618
15	Jalpaiguri	..	1,325	1,081	2,406	1,190	1,139	2,329	662	657	1,319	3,177	2,877	6,054	1,542	1,356
16	Darjeeling	..	216	192	408	303	276	579	297	272	569	816	740	1,556	504	482
17	Rangpur	..	5,274	4,422	9,696	2,903	2,526	5,429	1,853	1,653	3,506	10,030	8,601	18,631	4,047	4,054
18	Bogra	..	1,785	1,525	3,310	813	711	1,524	461	450	911	3,059	2,686	5,745	1,506	1,514
19	Pabna	..	1,687	1,338	3,025	813	749	1,562	638	603	1,241	3,138	2,690	5,828	2,095	2,104
20	Malda	..	1,401	1,053	2,454	639	640	1,279	628	638	1,266	2,668	2,331	4,999	2,716	2,418
	Dacca Division.															
21	Dacca	..	4,815	3,929	8,744	2,427	2,196	4,623	1,579	1,389	2,968	8,821	7,514	16,335	7,094	6,743
22	Mymensingh	..	7,859	6,166	14,025	2,714	2,393	5,107	2,010	1,994	4,004	12,583	10,553	23,136	6,824	6,491
23	Faridpur	..	3,478	2,847	6,325	2,367	1,878	4,245	1,124	1,076	2,200	6,969	5,801	12,770	5,735	5,303
24	Bakarganj	..	4,079	3,441	7,520	1,936	1,537	3,473	847	823	1,670	6,862	5,801	12,663	4,492	4,080
	Chittagong Division.															
25	Chittagong	..	1,634	1,332	2,966	1,265	1,177	2,442	985	984	1,969	3,884	3,493	7,377	4,858	4,923
26	Noakhali	..	1,732	1,480	3,212	1,090	983	2,073	674	646	1,320	3,496	3,109	6,605	3,560	3,534
27	Tippera	..	3,052	2,341	5,393	1,311	1,096	2,407	622	569	1,191	4,985	4,006	8,991	4,171	3,716
	Total for the Bengal Presidency.		74,493	61,193	135,686	34,618	30,743	65,361	22,342	21,656	43,998	131,453	113,592	245,045	82,470	79,495
	Population (Census of 1921).		..	..	..	..	..	..	..	..	681,295	688,771	1,370,066	2,223,523	2,382,938	
	Ratio per 1,000 of population.		..	..	..	..	..	..	..	..	183.2*	172.6*	178.1*	37.1	33.4	

* Ratio per 1,000

districts of the Bengal Presidency during the year 1928.

5		6		7		8		9		10		11		12	
5 years and under 10 years.		10 years and under 15 years.		15 years and under 20 years.		20 years and under 30 years.		30 years and under 40 years.		40 years and under 50 years.		50 years and under 60 years.		60 years and upwards.	
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male	Female.	Male.	Female.
1,153	1,045	790	651	891	1,280	1,975	2,490	2,213	1,855	2,032	1,517	1,671	1,478	2,482	2,636
737	778	431	408	426	658	1,154	1,396	1,250	1,060	1,087	903	1,114	1,002	1,594	1,677
703	770	480	377	498	676	1,170	1,342	1,204	965	1,270	814	1,081	978	1,523	1,701
1,977	1,891	1,431	1,092	1,659	2,072	3,595	4,619	3,804	3,379	3,284	2,532	2,953	2,666	4,130	4,128
863	821	625	518	664	1,046	1,416	1,966	1,614	1,503	1,475	1,163	1,279	1,159	1,965	2,127
975	918	614	513	644	792	1,295	1,432	1,456	1,119	1,211	874	1,057	907	1,772	1,856
2,546	2,068	1,526	1,143	1,556	2,065	3,460	3,914	3,158	2,523	2,599	1,746	2,126	1,664	3,936	3,417
784	726	750	539	841	780	2,610	1,905	2,402	1,529	1,938	1,460	1,579	1,242	2,941	2,711
1,879	1,618	1,375	1,171	1,246	1,479	2,182	2,516	2,387	1,990	2,028	1,578	1,756	1,560	1,947	1,942
1,525	1,228	885	684	823	974	1,822	2,102	1,890	1,502	1,634	1,200	1,253	986	2,085	2,196
2,369	2,024	1,476	1,116	1,416	1,915	2,921	3,590	3,286	2,774	2,869	2,073	2,249	1,692	3,167	2,716
1,118	924	674	584	777	1,399	1,528	2,494	1,578	1,412	1,401	1,032	1,317	972	2,020	1,477
2,150	1,651	1,435	1,179	1,523	2,085	3,284	4,273	3,315	2,748	2,367	1,83	1,583	1,289	1,842	1,462
2,471	1,812	1,399	1,060	1,427	1,879	3,377	5,111	3,573	3,384	2,713	1,955	2,101	1,492	2,753	1,690
742	610	535	494	621	971	1,654	2,360	1,751	1,707	1,441	893	975	591	1,452	861
312	301	254	230	307	308	640	683	592	472	391	327	411	250	489	385
2,773	2,413	1,496	1,568	1,655	2,615	3,551	5,152	3,683	3,578	3,085	2,615	2,569	2,119	2,894	2,056
1,027	952	616	615	564	893	1,129	1,643	1,121	1,078	961	757	756	577	1,038	877
1,532	1,213	811	611	761	1,095	1,601	,314	1,729	1,559	1,438	1,029	1,023	867	1,746	1,468
1,319	985	725	524	702	775	1,553	1,700	1,687	1,355	1,169	826	773	688	1,242	1,040
3,173	2,645	1,536	1,351	1,430	2,455	3,159	5,254	3,402	3,374	2,917	2,146	2,538	1,877	4,846	4,136
4,000	3,471	2,507	1,939	2,396	4,151	5,344	8,891	5,218	5,208	4,260	3,008	3,629	2,515	6,498	4,585
2,450	2,203	1,283	1,081	1,177	2,045	2,743	4,029	2,964	2,504	2,515	1,645	2,006	1,421	3,416	2,995
2,693	2,195	1,503	1,129	1,470	2,220	3,293	5,003	3,204	2,978	2,480	1,877	2,332	1,701	4,392	3,155
2,346	2,064	1,123	878	1,104	1,835	2,248	3,118	2,228	2,082	1,807	1,277	1,688	1,465	2,797	2,607
1,567	1,535	801	605	749	1,228	1,604	2,623	1,593	1,760	1,424	1,145	1,392	1,092	2,273	1,957
1,779	1,593	906	703	912	1,504	2,243	3,703	2,312	2,186	1,911	1,386	1,711	1,275	3,248	2,424
46,963	40,454	27,987	22,763	28,239	40,695	62,551	85,623	64,614	57,584	53,707	39,608	44,922	35,525	70,488	60,282
3,714,610	3,603,543	3,005,655	2,316,573	2,156,731	2,327,598	4,182,739	4,354,228	3,571,497	2,882,285	2,311,237	1,825,377	1,240,878	1,114,873	969,771	968,171
12·6	11·2	9·3	9·8	13·1	17·5	14·9	19·7	18·1	20·0	23·2	21·7	36·2	31·9	72·7	62·2

of births

Annual Form No. V.—Deaths registered according to CLASS in the

1 Number.	2 Districts.		3 Population according											
			Christians.			Hindus.			Muhammadans.			Buddhists.		
			Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
	<i>Burdwan Division.</i>													
1	Burdwan	2,292	1,894	4,186	569,896	552,335	1,122,231	136,518	129,763	266,281	24	..	24	
2	Birbhum	239	229	468	287,578	289,172	576,750	105,881	106,579	212,460	..	..	..
3	Bankura	748	673	1,421	439,368	441,071	880,439	24,064	22,537	46,601	..	..	..
4	Midnapur	3,172	2,666	5,838	1,183,637	1,168,233	2,351,870	89,698	90,974	180,672	17	18	35	
5	Hooghly	579	287	866	460,159	424,650	884,809	89,890	83,743	173,633	41	1	42	
6	Howrah	1,888	1,310	3,198	426,546	364,195	790,741	105,976	96,499	202,475	59	2	61	
	<i>Presidency Division.</i>													
7	24-Parganas ..	9,537	7,679	17,216	855,950	724,864	1,580,814	451,896	397,107	849,003	89	11	100	
8	Calcutta	22,306	18,070	40,376	498,899	250,933	749,832	191,116	78,733	269,849	2,792	676	3,468	
9	Nadia	4,438	4,095	8,533	296,023	285,740	581,763	459,827	435,363	895,190	5	5	10	
10	Murshidabad ..	254	271	525	284,585	284,205	568,790	335,289	340,968	676,257	10	1	11	
11	Jessore	1,140	1,111	2,251	335,486	320,857	656,343	556,917	506,638	1,063,555	34	16	50	
12	Khulna	1,203	1,014	2,217	378,514	348,347	726,861	377,237	345,650	722,887	28	1	29	
	<i>Rajshahi Division.</i>													
13	Rajshahi	506	494	1,000	166,885	151,500	318,385	584,523	555,733	1,140,256	11	1	12	
14	Dinaipur	2,612	2,397	5,009	401,213	350,648	751,861	435,901	400,902	836,803	2	..	2	
15	Jalpaiguri	4,476	4,250	8,726	280,367	234,735	515,102	125,091	106,592	231,683	3,281	2,817	6,098	
16	Darjeeling	4,121	3,977	8,098	106,716	94,600	201,316	5,139	3,377	8,516	26,456	25,513	51,969	
17	Rangpur	580	534	1,114	425,463	365,680	791,143	885,136	821,041	1,706,177	18	..	18	
18	Bogra	222	179	401	93,909	80,557	174,466	439,994	425,004	864,998	1	..	1	
19	Pabna	215	240	455	168,347	165,985	334,332	537,435	516,136	1,053,571	4	..	4	
20	Malda	292	256	548	202,051	198,469	400,520	251,652	256,033	507,685	..	..	..
	<i>Dacca Division.</i>													
21	Dacca	6,269	7,108	13,377	531,908	537,034	1,068,942	1,033,824	1,009,422	2,043,246	31	1	32	
22	Mymensingh ..	2,142	1,981	4,123	620,057	553,958	1,174,015	1,869,890	1,753,829	3,623,719	4	..	4	
23	Faridpur	3,287	3,012	6,299	409,206	406,428	815,634	735,200	692,639	1,427,839	3	..	3	
24	Bakarganj	3,754	3,820	7,574	385,789	368,671	754,460	948,132	903,107	1,851,239	5,425	4,938	10,363	
	<i>Chittagong Division.</i>													
25	Chittagong	701	660	1,361	180,162	183,733	363,895	563,162	610,043	1,173,205	33,527	38,875	72,402	
26	Noakhali	400	383	783	168,528	160,609	329,137	569,576	572,892	1,142,468	218	180	398	
27	Tippera	261	196	457	361,550	345,987	707,537	1,043,397	989,845	2,033,242	855	851	1,706	
	Total for the Bengal Presidency ..	77,634	68,786	146,420	10,518,792	9,653,196	20,171,988	12,952,361	12,251,149	25,203,510	72,935	73,907	146,842	

districts of the Bengal Presidency during the year 1928. *

to census of 1921.						4 Number of deaths registered..										Number.
Other Classes.			Total.			Christians.			Hindus.			Muhammadans.				
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.		
23,639	22,565	46,204	732,369	706,557	1,438,926	23	13	36	14,261	13,659	27,920	3,863	3,632	7,495	1	
29,288	28,604	57,892	422,986	424,584	847,570	12	9	21	8,625	8,370	16,995	3,250	3,005	6,255	2	
45,154	46,326	91,480	509,334	510,607	1,019,941	21	20	41	10,788	10,061	20,849	664	653	1,317	3	
63,128	65,117	128,245	1,339,652	1,327,008	2,666,660	13	19	32	27,977	27,644	55,621	2,278	2,005	4,283	4	
10,599	10,193	20,792	561,268	518,874	1,080,142	..	..	..	11,094	11,226	22,320	2,462	2,490	4,952	5
682	246	928	535,151	462,252	997,403	1	1	2	10,711	9,878	20,589	2,907	2,546	5,453	6	
6,588	5,071	11,659	1,324,060	1,134,732	2,458,792	122	104	226	19,021	17,066	36,087	10,163	8,895	19,058	7	
9,135	4,604	13,739	724,248	353,016	1,077,264	420	395	815	14,447	11,615	26,062	3,890	3,320	7,210	8	
1,052	1,024	2,076	761,345	726,227	1,487,572	115	113	228	8,378	8,011	16,389	13,844	12,874	26,718	9	
8,604	8,327	16,931	628,742	633,772	1,262,514	5	3	8	8,490	7,809	16,299	10,716	9,557	20,273	10	
15	5	20	893,592	828,627	1,722,219	7	12	19	9,597	9,017	18,614	17,198	15,758	32,956	11	
542	498	1,040	757,524	695,510	1,453,034	28	23	51	7,877	7,487	15,364	8,822	8,434	17,256	12	
15,445	14,577	30,022	767,370	722,305	1,489,675	10	6	16	3,999	3,814	7,813	20,680	19,659	40,339	13	
56,672	55,006	111,678	896,400	808,953	1,705,353	33	21	54	13,769	12,338	26,107	14,420	13,827	28,247	14	
90,182	84,478	174,660	503,397	432,872	936,269	98	90	188	6,299	5,683	11,982	3,667	3,456	7,123	15	
6,662	6,187	12,849	149,094	133,654	282,748	46	45	91	3,472	3,081	6,553	139	123	262	16	
5,643	3,759	9,402	1,316,840	1,191,014	2,507,854	2	7	9	11,019	10,677	21,696	24,483	23,894	48,377	17	
4,601	4,139	8,740	538,727	509,879	1,048,606	3	1	4	1,764	1,749	3,513	9,799	9,641	19,440	18	
701	431	1,132	706,702	682,792	1,389,494	2	3	5	3,518	3,391	6,909	12,347	11,546	23,893	19	
38,827	38,085	76,912	492,822	492,843	985,665	7	2	9	5,764	5,086	10,850	7,582	6,575	14,157	20	
188	182	370	1,572,220	1,553,747	3,125,967	166	167	333	13,190	13,416	26,606	25,560	23,912	49,472	21	
18,357	17,512	35,869	2,510,450	2,327,280	4,837,730	13	11	24	14,334	14,102	28,436	38,480	36,275	74,755	22	
46	37	83	1,147,742	1,102,116	2,249,858	63	60	123	10,146	10,041	20,187	21,049	18,926	39,975	23	
63	57	120	1,343,163	1,280,593	2,623,756	37	40	77	8,062	7,515	15,577	24,591	22,573	47,164	24	
330	229	559	777,882	833,540	1,611,422	16	6	22	5,001	4,840	9,841	18,253	17,625	35,878	25	
..	..	..	738,722	734,064	1,472,786	6	4	10	3,993	3,964	7,957	14,460	14,620	29,080	26
71	60	131	1,406,134	1,336,939	2,743,073	..	4	4	6,528	6,355	12,883	17,639	16,125	33,764	27	
436,214	417,319	853,533	24,057,936	22,464,357	46,522,293	1,269	1,179	2,448	262,124	247,895	510,019	333,206	311,946	645,152		

Annual Form No. V.—Deaths registered according to CLASS in the

Number.	Districts.	4 Number of deaths registered.											
		Buddhists.			Other Classes.			Total.			Christians.		
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
	<i>Burdwan Division.</i>												
1	Burdwan .. ..	..	..	..	1,144	981	2,125	19,291	18,285	37,576	10·0	6·9	8·6
2	Birbhum .. ..	..	..	..	912	876	1,788	12,799	12,260	25,059	50·2	39·3	44·9
3	Bankura .. ..	..	..	..	918	861	1,779	12,391	11,595	23,986	28·1	29·7	28·8
4	Midnapur .. ..	..	..	..	2,084	1,818	3,902	32,352	31,486	63,838	4·1	7·1	5·5
5	Hooghly .. ..	..	..	..	348	302	650	13,904	14,018	27,922	..	..	..
6	Howrah .. ..	..	..	..	12	6	18	13,631	12,431	26,062	·5	·8	·6
	<i>Presidency Division.</i>												
7	24 Parganas ..	..	..	..	48	33	81	29,354	26,098	55,452	12·8	13·5	13·1
8	Calcutta	2	2	4	22	6	28	18,781	15,338	34,119	18·8	21·9	20·2
9	Nadia .. ..	..	..	..	19	25	44	22,356	21,023	43,379	25·9	27·6	26·7
10	Murshidabad ..	..	..	..	244	217	461	19,455	17,586	37,041	19·7	11·1	15·2
11	Jessore .. ..	..	..	..	..	..	..	26,802	24,787	51,589	6·1	10·8	8·4
12	Khulna .. ..	..	..	..	16	22	38	16,743	15,966	32,709	23·3	22·7	23·0
	<i>Rajshahi Division.</i>												
13	Rajshahi .. ..	..	..	..	733	500	1,233	25,422	23,979	49,401	19·8	12·1	16·0
14	Dinajpur .. ..	..	..	..	2,423	1,931	4,354	30,645	28,117	58,762	12·6	8·8	10·8
15	Jalpaiguri	29	19	48	3,797	3,472	7,269	13,890	12,720	26,610	21·9	21·2	21·5
16	Darjeeling	745	647	1,392	314	282	596	4,716	4,178	8,894	11·2	11·3	11·2
17	Rangpur .. ..	..	..	..	279	193	472	35,783	34,771	70,554	3·5	13·1	8·1
18	Bogra .. ..	..	..	..	211	201	412	11,777	11,592	23,369	13·5	5·6	10·0
19	Pabna .. ..	..	..	..	7	10	17	15,874	14,950	30,824	9·3	12·5	11·0
20	Malda .. ..	..	..	..	1,201	979	2,180	14,554	12,642	27,196	24·0	7·8	16·4
	<i>Dacca Division.</i>												
21	Dacca .. ..	..	..	..	..	..	..	38,916	37,495	76,411	26·5	23·5	24·9
22	Mymensingh ..	..	..	..	432	424	856	53,259	50,812	104,071	6·1	5·5	5·8
23	Faridpur .. ..	..	..	..	..	..	..	31,258	29,027	60,285	19·2	19·9	19·5
24	Bakarganj	31	11	42	..	..	..	32,721	30,139	62,860	9·8	10·5	10·2
	<i>Chittagong Division.</i>												
25	Chittagong ..	813	771	1,584	..	..	..	24,083	23,242	47,325	22·8	9·1	16·2
26	Noakhali .. ..	..	..	..	..	..	..	18,459	18,588	37,047	15·0	10·4	12·8
27	Tippera	11	12	23	..	..	..	24,178	22,496	46,674	..	20·4	8·7
	Total for the Bengal Presidency ..	1,631	1,462	3,093	15,164	13,139	28,303	613,394	575,621	1,189,015	16·3	17·1	16·7

districts of the Bengal Presidency during the year 1928.

5															
Ratio of deaths per 1,000 of population.															
Hindus.			Muhammadans.			Buddhists.			Other Classes.			Total.			Number.
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	
25·0	24·7	24·9	28·3	28·0	28·1	..	..	..	48·3	43·5	46·0	26·3	25·9	26·1	1
30·0	28·9	29·5	30·7	28·2	29·4	..	..	..	31·1	30·6	30·9	30·3	28·9	29·6	2
24·5	22·8	23·7	27·6	29·0	28·3	..	..	..	20·3	18·6	19·4	24·3	22·7	23·5	3
23·6	23·7	23·6	25·4	22·0	23·7	..	..	..	33·0	27·9	30·4	24·1	23·7	23·9	4
24·1	26·4	25·2	27·4	29·7	28·5	..	..	..	32·8	29·6	31·3	24·8	27·0	25·8	5
25·1	27·1	26·0	27·4	26·4	26·9	..	..	..	17·6	24·4	19·4	25·5	26·9	26·1	6
22·2	23·5	22·8	22·5	22·4	22·4	..	..	..	7·3	6·5	6·9	22·2	23·0	22·5	7
29·0	46·3	34·7	20·3	42·2	26·7	7	3·0	1·1	2·4	1·3	2·0	25·9	43·4	31·7	8
28·3	28·0	28·2	30·1	29·6	29·8	..	..	..	18·1	24·4	21·2	29·4	28·9	29·2	9
29·8	27·5	28·6	32·0	28·0	30·0	..	..	..	28·3	26·1	27·2	30·9	27·7	29·3	10
28·6	28·1	28·3	30·9	31·1	31·0	..	..	..	..	..	..	30·0	29·9	29·9	11
20·8	21·5	21·1	23·4	24·4	23·9	..	..	..	29·5	44·2	36·5	22·1	22·9	22·5	12
24·0	25·2	24·5	35·4	35·4	35·4	..	..	..	47·5	34·3	41·1	33·1	33·2	33·2	13
34·3	35·2	34·7	33·1	34·5	33·8	..	..	..	42·7	35·1	39·0	34·2	34·8	34·5	14
22·5	24·2	23·3	29·3	32·4	30·7	8·8	6·7	7·9	42·1	41·1	41·6	27·6	29·4	28·4	15
32·5	32·6	32·5	27·0	36·4	30·8	28·2	25·4	26·8	47·1	45·6	46·4	31·6	31·3	31·4	16
25·9	29·2	27·4	27·7	29·1	28·4	..	..	..	49·4	51·3	50·2	27·2	29·2	28·1	17
18·8	21·7	20·1	22·3	22·7	22·5	..	..	..	45·9	48·5	47·1	21·9	22·7	22·3	18
20·9	20·4	20·7	23·0	22·4	22·7	..	..	..	10·0	23·2	15·0	22·5	21·9	22·2	19
28·5	25·6	27·1	30·1	25·7	27·9	..	..	..	30·9	25·7	28·3	29·5	25·6	27·6	20
24·8	25·0	24·9	24·7	23·7	24·2	..	..	..	..	..	..	24·7	24·1	24·4	21
23·1	25·4	24·2	20·6	20·7	20·6	..	..	..	23·5	24·2	23·9	21·2	21·3	21·5	22
24·8	24·7	24·7	28·6	27·3	28·0	..	..	..	..	..	..	27·2	26·3	26·8	23
20·9	20·4	20·6	25·9	25·0	25·5	5·7	2·2	4·0	..	..	..	24·4	23·5	24·0	24
27·7	26·3	27·0	32·4	28·9	30·6	24·2	19·8	21·9	..	..	..	30·9	27·9	29·4	25
23·7	24·7	24·2	25·4	25·5	25·4	..	..	..	..	..	..	25·0	25·3	25·1	26
18·0	18·4	18·2	16·9	16·3	16·6	12·9	14·1	13·5	..	..	..	17·2	16·8	17·0	27
24·9	25·7	25·3	25·7	25·5	25·6	22·4	19·8	21·1	34·8	31·5	33·2	25·5	25·6	25·5	

Annual Form No. VI.—Deaths registered from DIFFERENT CAUSES in the

1	2	3	4	5	6	7	8	9	10			
									In			
									Suicide.		Wounds or accidents.	Snake- bite or killed by wild beasts.
Number.	Districts and towns.	Population according to Census of 1921.	Cholera.	Small- pox.	Plague.	Fever.	Dysentery and diarrhœa.	Respira- tory diseases.	Male.	Female.		
	DISTRICTS (EXCLUDING TOWNS).											
	<i>Burdwan Division.</i>											
1	Burdwan ..	1,343,185	3,323	1,025	1	23,750	1,151	2,301	29	62	340	200
2	Birbhum ..	838,655	1,992	328	..	18,489	272	698	31	35	217	122
3	Bankura ..	964,487	532	150	..	15,016	1,056	1,681	28	36	234	129
4	Midnapur ..	2,595,071	6,096	3,622	..	38,287	1,441	1,933	58	50	820	397
5	Hooghly ..	900,802	2,135	698	..	14,927	1,226	2,147	51	58	286	170
6	Howrah ..	778,893	3,885	274	..	7,586	2,184	1,920	35	64	312	115
	<i>Presidency Division.</i>											
7	24-Parganas ..	1,998,318	11,348	913	..	24,211	895	1,990	96	125	756	343
8	Nadia ..	1,390,704	4,948	1,149	..	28,471	290	1,309	71	125	329	223
9	Murshidabad ..	1,182,983	3,946	2,492	..	22,104	47	86	51	66	355	256
10	Jessore ..	1,700,924	4,208	249	..	41,342	182	375	128	172	341	230
11	Khulna ..	1,421,116	4,078	58	..	18,323	523	770	84	138	462	215
	<i>Rajshahi Division.</i>											
12	Rajshahi ..	1,457,037	6,539	762	..	35,333	108	75	71	88	293	301
13	Dinajpur ..	1,687,328	1,565	1,635	..	51,534	119	247	34	54	307	301
14	Jalpaiguri ..	921,749	489	79	..	21,558	905	1,186	9	3	168	31
15	Darjeeling ..	254,045	117	10	..	5,714	527	377	14	15	44	8
16	Rangpur ..	2,482,722	4,976	2,270	1	57,819	981	750	28	50	423	169
17	Bogra ..	1,032,300	2,021	1,852	..	15,984	402	393	30	46	280	121
18	Pabna ..	1,344,633	4,184	593	..	21,895	200	297	23	56	253	104
19	Malda ..	955,830	1,052	3,213	..	19,645	15	39	14	16	123	154
	<i>Dacca Division.</i>											
20	Dacca ..	2,975,915	12,684	6,869	..	34,746	3,355	1,565	67	106	451	150
21	Mymensingh ..	4,703,249	15,639	4,640	..	60,736	2,319	959	71	95	774	192
22	Faridpur ..	2,202,783	9,629	2,209	..	34,629	2,306	2,354	40	64	371	183
23	Bakarganj ..	2,563,849	7,519	141	..	37,581	959	350	142	152	964	150
	<i>Chittagong Division.</i>											
24	Chittagong ..	1,570,760	4,311	3,998	..	35,080	634	212	14	22	804	53
25	Noakhali ..	1,465,071	5,431	379	..	23,986	955	224	18	24	750	69
26	Tippera ..	2,678,627	6,310	2,458	..	26,623	1,685	892	21	35	340	42
	Total of Districts ..	43,411,036	128,957	42,066	2	735,369	24,737	25,130	1,258	1,757	10,797	4,428
	TOWNS.											
	<i>Burdwan District.</i>											
1	Burdwan ..	34,616	40	43	..	174	161	204	1	..	24	6
2	Kalna ..	8,424	13	18	..	125	26	47	2	1	2	..
3	Katwa ..	6,823	7	..	..	29	8	11	..	3	..	..
4	Dainhat ..	4,843	40	..	..	27	1	10	..	..	2	1
5	Raniganj ..	14,536	11	3	..	66	17	53	..	..	6	2
6	Asansol ..	26,499	24	1	..	17	2	30	..	1	8	1
	<i>Birbhum District.</i>											
7	Suri ..	8,915	2	3	..	40	1	30	..	..	1	1
	<i>Bankura District.</i>											
8	Bankura ..	25,412	10	5	..	66	16	47	5	2	12	4
9	Vishnupur ..	19,398	3	..	..	172	33	41	..	2	1	..
10	Sonamukhi ..	10,644	4	..	..	49	17	27	2	2	4	..

districts and towns of the Bengal Presidency during the year 1928.

jury.		11	12	13 Ratio of deaths per 1,000 of population.										Number.
Rabies.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injury.	All other causes.	From all causes.		
												For the year.	Mean of previous five years.	
19	650	3,429	35,630	2.5	.8	.0007	17.7	.9	1.7	.5	2.5	26.5	26.1	1
3	408	2,774	24,961	2.4	.4	..	22.0	.3	.8	.5	3.3	29.8	28.0	2
12	439	4,336	23,210	.5	.1	..	15.6	1.0	1.7	.4	4.5	24.1	25.8	3
28	1,353	9,758	62,490	2.3	1.4	..	14.7	.5	.7	.5	3.8	24.1	24.1	4
10	575	2,738	24,446	2.4	.8	..	16.6	1.4	2.4	.6	3.0	27.1	26.4	5
10	536	2,587	18,972	5.0	.3	..	9.7	2.8	2.5	.7	3.3	24.3	24.6	6
86	1,406	6,784	47,547	5.7	.4	..	12.1	.4	1.0	.7	3.4	23.8	25.0	7
34	782	4,579	41,528	3.5	.8	..	20.5	.2	.9	.6	3.3	29.9	31.1	8
21	749	5,856	35,280	3.3	2.1	..	18.7	.04	.1	.6	4.9	29.8	31.2	9
3	874	3,854	51,084	2.5	.1	..	24.3	.1	.2	.5	2.3	30.0	28.3	10
25	924	7,500	32,176	2.9	.04	..	12.9	.4	.5	.6	5.3	22.6	25.0	11
36	789	5,223	48,829	4.5	.5	..	24.2	.1	.05	.5	3.6	33.5	34.3	12
..	696	2,753	58,549	.9	1.0	..	30.5	.1	.2	.4	1.6	34.7	33.2	13
..	211	1,944	26,372	.5	.1	..	23.4	1.0	1.3	.2	2.1	28.6	28.8	14
..	81	1,414	8,240	.5	.04	..	22.5	2.0	1.5	.3	5.6	32.4	32.9	15
15	685	2,746	70,228	2.0	.9	.0004	23.3	.4	.3	.3	1.1	28.3	29.0	16
18	495	1,991	23,138	2.0	1.8	..	15.5	.4	.4	.5	1.9	22.4	24.0	17
13	449	2,367	29,985	3.1	.4	..	16.3	.2	.2	.3	1.8	22.3	26.6	18
4	311	2,417	26,692	1.1	3.4	..	20.5	.02	.04	.3	2.5	27.9	27.5	19
26	800	11,519	71,538	4.3	2.3	..	11.7	1.1	.5	.3	3.9	24.0	20.7	20
19	1,151	16,615	102,059	3.3	1.0	..	12.9	.4	.2	.2	3.5	21.7	21.6	21
29	687	7,748	59,562	4.4	1.0	..	15.7	1.0	1.1	.3	3.5	27.0	24.5	22
..	1,408	14,123	62,081	2.9	.05	..	14.7	.4	.1	.5	5.5	24.2	25.4	23
..	893	1,381	46,509	2.7	2.5	..	22.3	.4	.1	.6	.9	29.6	23.5	24
6	867	5,100	36,942	3.7	.3	..	16.4	.6	.1	.6	3.5	25.2	24.3	25
9	447	7,486	45,901	2.3	.9	..	9.9	.6	.3	.2	2.8	17.1	17.2	26
426	18,666	139,022	1,113,949	3.0	1.0	.00005	16.9	.6	.6	.4	3.2	25.7	25.4	
1	32	253	907	1.1	1.2	..	5.0	4.7	5.9	.9	7.3	26.2	18.6	1
..	5	62	296	1.5	2.1	..	14.8	3.1	5.6	.6	7.4	35.1	35.4	2
..	3	22	80	1.0	..	..	4.2	1.2	1.6	.4	3.2	11.7	11.1	3
..	3	10	91	8.3	..	..	5.6	.2	2.1	.6	2.1	18.8	21.7	4
..	8	99	257	.8	.2	..	4.5	1.1	3.6	.5	6.8	17.7	17.1	5
2	12	229	315	.9	.04	..	.6	.1	1.1	.4	8.6	11.9	9.9	6
..	2	20	98	.2	.3	..	4.5	.1	3.4	.2	2.2	11.0	5.8	7
..	23	70	237	.4	.2	..	2.6	.6	1.8	.9	2.7	9.3	11.2	8
..	3	99	351	.1	..	..	8.9	1.6	2.1	.1	5.1	18.1	17.6	9
..	8	83	188	.4	..	..	4.6	1.6	2.5	.7	7.8	17.7	21.5	10

Annual Form No. VI.—Deaths registered from DIFFERENT CAUSES in the

1 Number.	2 Districts and towns.	3 Population according to Census of 1921.	4 Cholera.	5 Small- pox.	6 Plague.	7 Fever.	8 Dysentery and diarrhoea.	9 Respira- tory diseases.	10 In				
									Suicide.		Wounds or accidents.	Snake- bite or killed by wild beasts.	
									Male.	Female.			
TOWNS—contd.													
Midnapur District.													
11	Midnapur ..	28,965	2	6	..	90	36	80	..	..	2	..
12	Ghatal ..	10,770	30	8	..	52	39	57	..	..	5	4
13	Kharar ..	6,580	6	16	..	17	18	36	..	..	..	..
14	Chandrakona ..	6,470	3	13	..	57	16	57	..	..	2	2
15	Ramjibanpur ..	6,700	5	7	..	35	31	70	..	1	5	3	
16	Khirpai ..	3,756	3	..	..	32	17	33	..	..	1	1
17	Tamluk ..	8,348	57	..	..	27	15	11	..	..	..	..
Hooghly District.													
18	Hooghly-Chinsura ..	29,938	53	5	..	297	130	114	4	6	14	3	
19	Bansberia ..	6,382	23	..	..	63	17	19	1	..	1	..
20	Arambagh ..	7,857	21	..	..	56	23	38	..	..	1	..
21	Serampur ..	33,197	43	17	..	97	133	105	2	1	17	3	
22	Rishra-Konnagar ..	23,259	47	7	..	53	53	33	1	..	1	1	
23	Uttarpara ..	8,657	24	10	..	33	32	37	2	1	3	1	
24	Kotrung ..	6,846	46	1	..	20	21	10	..	..	1	..
25	Baidyabati ..	16,471	12	12	..	108	90	33	1	..	3	1	
26	Bhadreswar ..	22,081	23	2	..	135	46	33	1	1	..	..
27	Champdani ..	24,652	82	6	..	65	30	45	..	..	4	1
Howrah District.													
28	Howrah ..	195,301	541	51	..	1,081	1,090	1,899	10	9	116	8	
29	Bally ..	23,209	47	25	..	123	60	50	..	..	3	2
24-Parganas District.													
30	South Suburban ..	33,345	178	8	..	272	109	135	..	1	11	5	
31	Tollyganj ..	21,637	21	8	..	128	67	47	..	..	3	..
32	Budge-Budge ..	25,723	177	1	..	103	114	38	1	3	10	4	
33	Baranagar ..	32,084	114	82	..	108	185	101	1	3	11	1	
34	Kamarhati ..	23,018	50	11	..	93	92	59	1	..	5	..	
35	Rajpur ..	11,412	23	5	..	62	10	37	1	..	4	1	
36	Baruipur ..	5,114	8	..	..	26	9	20	..	..	..	1
37	Jaynagar ..	8,408	44	3	..	50	28	29	1	..	3	..	
38	North Dum Dum ..	8,224	8	..	..	20	22	22	..	1	3	..
39	South Dum Dum ..	14,030	27	6	..	44	37	57	1	1	4	1	
40	Khardah ..	5,486	7	..	..	22	20	15	..	..	1	..
41	Barrackpur ..	22,460	15	1	..	41	26	35	..	..	5	..
42	Panihati ..	10,161	34	1	..	33	20	43	..	..	..	2
43	North Barrackpur ..	15,433	50	1	..	46	39	46	..	1	5	..	
44	Titagarh ..	52,451	34	1	..	619	44	13	..	..	4	1
45	Garulia ..	13,096	26	..	..	54	10	16	..	..	1	2
46	Naihati ..	23,286	49	..	..	39	27	38	2	3	3	1
47	Halisahar ..	7,318	39	..	..	33	8	19	..	..	1	..
48	Kan. hrapara ..	10,332	12	..	..	94	11	9	1	..	3	..
49	Bhatpara ..	65,609	196	17	..	472	123	129	..	..	14	2
50	Barasat ..	8,211	5	3	..	39	8	7	..	..	2	2
51	Gobardanga ..	5,112	9	..	..	40	18	39	..	1	1	2
52	Basirhat ..	19,267	55	..	..	99	31	53	..	3	7	1
53	Baduria ..	14,057	35	..	..	76	..	4	..	1	1	..
54	Taki ..	5,200	33	..	..	35	10	22	..	..	1	..
City of Calcutta.													
55	Calcutta ..	1,077,264	2,584	558	4	4,798	3,627	10,633	15	10	648	..	
Nadia District.													
56	Krishnagar ..	22,309	15	18	..	94	13	29	2	..	1	1	
57	Nabadwip ..	15,584	93	43	..	92	45	31	1	1	2	..	
58	Ranaghat ..	9,652	21	..	..	62	29	20	..	..	2	..
59	Birnagar ..	2,305	1	..	..	16	5	10	..	..	..	1
60	Santipur ..	24,792	89	4	..	267	99	99	..	7	3	4	

districts and towns of the Bengal Presidency during the year 1928.

jury.		11	12	13										14
		Ratio of deaths per 1,000 of population.												
Rabies.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injury.	All other causes.	From all causes.		Number.
												For the year.	Mean of previous five years.	
1	3	136	353	·1	·2	..	3·1	1·3	2·8	·1	4·7	12·2	13·9	11
..	9	41	236	2·8	·7	..	4·8	3·6	5·3	·8	3·8	21·9	18·0	12
..	..	49	142	·9	2·4	..	2·6	2·7	5·5	..	7·4	21·6	22·6	13
..	4	49	199	·5	2·0	..	8·8	2·4	8·8	·6	7·6	30·7	35·1	14
..	9	16	173	·7	1·0	..	5·2	4·6	10·4	1·3	2·4	25·8	24·8	15
..	2	..	87	·8	..	..	8·5	4·5	8·8	·5	..	23·2	27·9	16
..	..	48	158	6·8	..	..	3·2	1·8	1·3	..	5·7	18·9	15·7	17
..	27	361	987	1·8	·2	..	9·9	4·3	3·8	·9	12·1	33·0	26·0	18
..	2	5	129	3·6	..	..	9·9	2·7	3·0	·3	·8	20·2	23·3	19
..	1	53	192	2·7	..	..	7·1	3·0	4·8	·1	6·7	24·4	19·1	20
..	23	123	541	1·3	·5	..	2·9	4·0	3·2	·7	3·7	16·3	18·3	21
..	3	85	281	2·0	·3	..	2·3	2·2	1·4	·1	3·6	12·1	14·5	22
..	7	48	191	2·8	1·1	..	3·8	3·6	4·3	·8	5·5	22·1	18·1	23
..	1	27	126	6·7	·1	..	2·9	3·0	1·5	·1	3·9	18·4	16·1	24
..	5	97	357	·7	·7	..	6·6	5·4	2·0	·3	5·9	21·7	21·5	25
..	2	128	369	1·0	·1	..	6·1	2·1	1·5	·1	5·8	16·7	16·8	26
..	5	70	303	3·3	·2	..	2·6	1·2	1·8	·2	2·8	12·3	10·5	27
..	143	1,919	6,724	2·8	·3	..	5·5	5·5	9·7	·7	9·8	34·4	33·6	28
..	5	56	366	2·0	1·1	..	5·3	2·5	2·1	·2	2·4	15·8	14·8	29
1	18	169	889	5·3	·2	..	8·2	3·3	4·0	·5	5·1	26·7	19·2	30
..	3	113	387	1·0	·4	..	5·9	3·1	2·2	·1	5·2	17·9	13·6	31
..	18	50	501	6·9	·04	..	4·0	4·4	1·5	·7	1·9	19·5	17·4	32
..	16	188	794	3·5	2·5	..	3·4	5·8	3·1	·5	5·9	24·7	24·9	33
..	6	55	366	2·2	·5	..	4·0	4·0	2·6	·3	2·4	15·9	16·1	34
1	7	66	210	2·0	·4	..	5·4	·8	3·2	·6	5·8	18·4	19·4	35
..	1	1	65	1·6	..	..	5·1	1·8	3·9	·2	·2	12·7	17·6	36
1	5	3	162	5·2	·3	..	5·9	3·3	3·4	·6	·3	19·3	19·0	37
..	4	20	96	1·0	..	..	2·4	2·6	2·7	·5	2·4	11·7	19·0	38
..	7	88	266	1·9	·4	..	3·1	2·6	4·1	·5	6·3	19·0	18·5	39
..	1	18	83	1·3	..	..	4·0	3·6	2·7	·2	3·3	15·1	15·5	40
..	5	25	148	·7	·04	..	1·8	1·1	1·6	·2	1·1	6·6	7·4	41
..	2	118	251	3·3	·1	..	3·2	2·0	4·2	·2	11·6	24·7	24·7	42
..	6	48	236	3·2	·1	..	3·0	2·5	3·0	·4	3·1	15·2	17·5	43
..	5	46	762	·6	·02	..	11·8	·8	·2	·1	·9	14·5	17·4	44
..	3	10	119	2·0	..	..	4·1	·8	1·2	·2	·8	9·1	9·6	45
..	9	115	277	2·1	..	..	1·7	1·2	1·6	·4	4·9	11·9	11·3	46
..	1	36	136	5·3	..	..	4·5	1·1	2·6	·1	4·9	18·6	16·8	47
..	4	5	135	1·2	..	..	9·1	1·1	·9	·4	·5	13·1	11·3	48
..	16	280	1,233	3·0	·3	..	7·2	1·9	2·0	·2	4·3	18·8	16·7	49
..	4	5	71	·6	·4	..	4·7	1·0	·8	·5	·6	8·6	12·7	50
..	4	7	117	1·8	..	..	7·8	3·6	7·6	·8	1·4	22·9	15·2	51
..	11	99	348	2·8	..	..	5·1	1·6	2·7	·6	5·1	18·1	24·1	52
..	2	1	118	2·5	..	..	5·4	..	·3	·1	·1	8·4	15·3	53
..	1	34	135	6·3	..	..	6·7	1·9	4·0	·2	6·5	26·0	28·6	54
21	694	11,221	34,119	2·4	·5	·004	4·4	3·4	9·9	·6	10·4	31·7	31·0	55
..	4	61	234	·7	·8	..	4·2	·6	1·3	·2	2·7	10·5	12·7	56
..	4	83	391	6·0	2·8	..	5·9	2·9	2·0	·2	5·3	25·1	19·8	57
..	2	24	158	2·2	..	..	6·4	3·0	2·1	·2	2·5	16·4	16·8	58
..	1	38	71	·4	..	..	6·9	2·2	4·3	·4	16·5	30·8	24·3	59
1	15	115	688	3·6	·2	..	10·8	4·0	4·0	·6	4·6	27·7	26·8	60

Annual Form No. VI.—Deaths registered from DIFFERENT CAUSES in the

1 Number.	2 Districts and Towns.	3 Population according to Census of 1921.	4 Cholera.	5 Small-pox.	6 Plague.	7 Fever.	8 Dysentery and diarrhœa	9 Respiratory diseases.	10 In			
									Suicide.		Wounds or accidents.	Snake-bite or killed by wild beasts.
									Male.	Female.		
	TOWNS—contd.											
	Nadia District—concl'd.											
61	Chakdaha ..	5,216	23	..	..	54	9	9	..	..	..	..
62	Kushtia ..	7,849	29	..	..	21	11	8	..	..	1	1
63	Kumarkhali ..	3,763	1	..	..	33	5	13	..	..	1	..
64	Meherpur ..	5,398	13	..	..	24	4	6	1	..	3	1
	Murshidabad District.											
65	Berhampur ..	26,670	83	36	..	308	68	93	1	..	8	2
66	Murshidabad ..	10,669	9	45	..	139	13	28	..	..	1	..
67	Jiaganj-Azimganj ..	11,231	13	36	..	99	12	25	..	..	9	..
68	Kandi ..	11,787	37	1	..	118	12	16	..	..	..	3
69	Jangipur ..	10,739	15	3	..	94	6	5	..	..	2	..
70	Dhulian ..	8,435	..	37	..	112	1	7	..	..	1	1
	Jessore District.											
71	Jessore ..	10,139	7	..	..	104	21	31	..	..	2	..
72	Kotchandpur ..	7,545	14	..	..	119	11	10	..	1	1	..
73	Maheshpur ..	3,611	32	..	..	49	1	13	..	..	1	..
	Khulna District.											
74	Khulna ..	16,049	28	..	..	123	32	31	1	..	6	2
75	Satkhira ..	10,299	22	10	..	75	12	45	..	1	8	..
76	Debhatta ..	5,570	5	..	..	23	15	5	..	..	..	2
	Rajshahi District.											
77	Rajshahi ..	24,598	55	11	..	123	19	42	..	..	10	3
78	Nator ..	8,040	22	..	..	54	7	34	1	..	..	2
	Dinajpur District.											
79	Dinajpur ..	18,025	26	4	..	78	20	28	..	1	2	..
	Jalpaiguri District.											
80	Jalpaiguri ..	14,520	32	..	..	72	18	66	..	1	7	..
	Darjeeling District.											
81	Darjeeling ..	22,258	..	6	..	90	6	110	1	..	..	..
82	Kurseong ..	6,445	..	..	..	158	10	44	1	..	2	..
	Rangpur District.											
83	Rangpur ..	19,076	3	1	..	81	44	16	1	2	2	..
84	Gaibandha ..	6,056	21	..	..	16	13	9	1	..	4	..
	Bogra District.											
85	Bogra ..	12,322	10	15	..	32	10	16	..	..	7	..
86	Sherpur ..	3,984	13	2	..	40	4	10	2	..	2	1

districts and towns of the Bengal Presidency during the year 1928.

jury.		11	12	13 Ratio of deaths per 1,000 of population.										14
Rabies.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injury.	All other causes.	From all causes		Number.
												For the year.	Mean of previous five years.	
..	..	..	95	4.4	..	..	10.3	1.7	1.7	..	..	18.2	24.3	61
..	2	15	86	3.7	..	..	2.7	1.4	1.0	.2	1.9	10.9	13.5	62
..	1	4	57	.3	..	..	8.8	1.3	3.4	.3	1.1	15.1	27.9	63
1	6	18	71	2.4	..	..	4.4	.7	1.1	1.1	3.3	13.1	16.1	64
..	11	132	731	3.1	1.3	..	11.5	2.5	3.5	.4	4.9	27.4	20.9	65
..	1	1	236	.8	4.2	..	13.0	1.3	2.6	.1	.1	22.1	25.3	66
..	9	57	251	1.2	3.2	..	8.8	1.0	2.2	.8	5.1	22.3	24.0	67
..	3	59	246	3.1	.1	..	10.0	1.0	1.4	.2	5.0	20.9	20.0	68
..	2	5	130	1.4	.3	..	8.7	.6	.5	.2	.5	12.1	14.1	69
..	2	8	167	..	4.4	..	13.3	.1	.8	.2	1.0	19.8	23.6	70
..	2	55	220	.7	..	..	10.2	2.1	3.0	.2	5.4	21.7	19.2	71
..	2	14	170	1.8	..	..	15.8	1.4	1.3	.3	1.8	22.5	18.3	72
..	1	19	115	8.9	..	..	13.6	.3	3.6	.3	5.3	31.8	21.0	73
..	9	27	250	1.7	..	..	7.7	2.0	1.9	.6	1.7	15.6	15.4	74
..	9	53	226	2.1	1.0	..	7.3	1.2	4.4	.9	5.1	21.9	19.0	75
..	2	7	57	.9	..	..	4.1	2.6	.9	.4	1.2	10.2	17.0	76
1	14	131	395	2.2	.4	..	5.0	.8	1.7	.6	5.3	16.0	17.9	77
1	4	56	177	2.7	..	..	6.7	.9	4.2	.5	7.0	22.0	20.6	78
..	3	54	213	1.4	.2	..	4.3	1.1	1.6	.2	3.0	11.8	11.0	79
..	8	42	238	2.2	..	..	5.0	1.2	4.5	.5	2.9	16.4	15.2	80
..	1	161	374	..	.3	..	4.0	.2	4.9	.04	7.2	16.8	18.6	81
..	3	65	280	..	..	..	24.5	1.6	6.8	.5	10.1	43.4	40.3	82
..	5	99	249	.2	.05	..	4.2	2.3	.8	.3	5.2	13.0	14.9	83
..	5	13	77	3.5	..	..	2.6	2.1	1.5	.8	2.1	12.7	6.9	84
..	7	50	140	.8	1.2	..	2.6	.8	1.3	.6	4.0	11.4	16.6	85
..	5	17	91	3.3	.5	..	10.0	.9	2.5	1.2	4.3	22.8	22.3	86

Annual Form No. VI.—Deaths registered from DIFFERENT CAUSES in the

1 Number.	2 Districts and Towns.	3 Population according to Census of 1921.	4 Cholera.	5 Small- pox.	6 Plague.	7 Fever.	8 Dysentery and diarrhœa.	9 Respira- tory diseases.	10 In			
									Suicide.		Wounds or accidents.	Snake- bite or killed by wild beasts.
									Male.	Female.		
	TOWNS—concl'd.											
	Pabna District.											
87	Pabna	19,343	7	46	..	98	19	16	..	..	6	..
88	Sirajganj	25,518	167	3	..	202	18	14	1	1	67	3
	Malda District.											
89	English Bazar ..	14,057	11	8	..	55	16	23	..	..	3	1
90	Old Malda	3,145	..	1	..	30	7	6	..	..	..	..
91	Nawabganj	12,633	11	6	..	129	22	50	..	..	6	..
	Dacca District.											
92	Dacca	119,450	314	15	..	645	528	775	11	3	68	8
93	Narayanganj ..	30,602	142	65	..	282	94	43	1	2	12	..
	Mymensingh District.											
94	Mymensingh ..	25,287	20	3	..	227	35	31	..	..	7	1
95	Muktagacha ..	6,770	8	..	..	24	5	5	..	..	..	..
96	Netrakona ..	8,687	85	8	..	48	24	9	..	..	3	2
97	Jamalpur ..	23,113	19	7	..	186	16	37	..	..	10	..
98	Sherpur ..	17,813	21	1	..	77	34	12	..	..	..	1
99	Kishorganj ..	19,518	8	3	..	48	46	21	1	2	1	..
100	Bajitpur ..	11,568	21	8	..	33	14	7	..	1	..	..
101	Tangail ..	14,305	37	8	..	99	18	24	..	..	..	..
102	Gauripur ..	7,420	12	..	..	32	6	4	..	..	3	..
	Faridpur District.											
103	Faridpur ..	14,503	53	1	..	90	24	21	..	..	1	..
104	Madaripur ..	25,297	84	..	..	83	52	11	..	..	1	2
105	Rajbari ..	7,275	11	1	..	97	18	9	..	..	..	..
	Bakarganj District.											
106	Barisal ..	26,744	86	2	..	195	55	21	1	..	6	..
107	Jhalakati ..	5,955	30	..	..	9	3	12	..	..	5	..
108	Nalchiti ..	1,858	4	..	..	8	8	1	..	1	..	..
109	Pirojpur ..	13,841	18	..	..	42	3	11	3	..	7	..
110	Patuakhali ..	6,984	22	..	..	20	5	5	..	..	..	..
111	Bhola ..	4,525	13	4	..	8	3	8	1	..	1	..
	Chittagong District.											
112	Chittagong ..	36,030	62	40	..	198	65	48	..	2	15	..
113	Cox's Bazar ..	4,632	6	..	..	36	3	5	..	1	1	..
	Noakhali District.											
114	Noakhali ..	7,715	41	4	..	27	16	4	..	..	3	1
	Tippera District.											
115	Comilla ..	25,914	33	2	..	26	22	7	1	..	..	..
116	Brahmanbaria ..	23,414	90	19	..	118	28	28	..	..	1	..
117	Chandpur ..	15,118	65	..	..	40	26	9	..	1	1	..
	Total of Towns ..	3,111,257	7,288	1,492	4	16,634	8,682	17,112	89	86	1,306	114
	Total for the Bengal Presidency ..	46,522,293	136,245	43,558	6	752,003	33,419	42,242	1,347	1,843	12,103	4,542

districts and towns of the Bengal Presidency during the year 1928.

jury.		11	12	13										14
				Ratio of deaths per 1,000 of population.										
Rabies.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injury.	All other causes	From all causes.		Number.
												For the year.	Mean of previous five years.	
..	1	6	69	..4	2.4	..	5.1	1.0	..8	..3	3.6	13.5	13.9	87
..	73	101	578	6.5	..1	..	7.9	..6	..5	2.9	4.0	22.6	23.3	88
2	6	49	168	..8	..6	..	3.9	1.1	1.6	..4	3.5	11.9	17.7	89
..	..	11	55	..	..3	..	9.5	2.2	1.9	..	3.5	17.5	28.6	90
..	6	57	281	..9	..5	..	10.2	1.7	4.0	..5	4.5	22.2	17.7	91
2	92	1,464	3,833	2.6	..1	..	5.4	4.4	6.5	..8	12.2	32.1	27.9	92
..	15	399	1,040	4.6	2.1	..	9.2	3.1	1.4	..5	13.0	34.0	26.7	93
1	9	97	422	..8	..1	..	9.0	1.3	1.2	..3	3.8	16.7	17.7	94
..	..	34	76	1.2	..	..	3.5	..7	..7	..	5.0	11.2	13.3	95
1	6	71	251	9.8	..9	..	5.5	2.7	1.0	..7	8.2	28.9	20.0	96
..	10	111	386	..8	..3	..	8.0	..7	1.6	..4	4.8	16.7	20.4	97
1	2	116	263	1.2	..1	..	4.3	1.9	..7	..1	6.5	14.8	20.9	98
..	4	30	160	..4	..1	..	2.5	2.3	1.1	..2	1.5	8.2	12.2	99
..	1	50	134	1.8	..7	..	2.8	1.2	..6	..1	4.3	11.6	13.5	100
..	..	68	254	2.6	..6	..	6.9	1.3	1.7	..	4.7	17.7	15.2	101
1	4	8	66	1.6	..	..	4.3	..8	..5	..5	1.1	8.9	..	102
..	1	61	251	3.6	..1	..	6.2	1.7	1.4	..1	4.2	17.3	18.7	103
..	3	92	325	3.3	..	..	3.3	2.1	..4	..1	3.6	12.8	14.3	104
..	..	11	147	1.5	..1	..	13.3	2.4	1.2	..	1.5	20.2	14.0	105
..	7	60	426	3.2	..1	..	7.3	2.0	..8	..3	2.2	15.9	13.0	106
..	5	16	75	5.0	..	..	1.5	..5	2.0	..8	2.7	12.6	12.6	107
..	1	5	27	2.1	..	..	4.3	4.3	..5	..5	2.7	14.5	12.4	108
..	10	59	143	1.3	..	..	3.0	..2	..8	..7	4.3	10.3	10.4	109
..	..	14	66	3.1	..	..	2.9	..7	..7	..	2.0	9.4	18.0	110
..	2	4	42	2.9	..9	..	1.8	..7	1.8	..4	..9	9.3	5.3	111
..	17	317	747	1.7	1.1	..	5.5	1.7	1.3	..5	8.8	20.7	15.6	112
..	2	17	69	1.3	..	..	7.8	..6	1.1	..4	3.7	14.9	15.1	113
..	4	9	105	5.3	..5	..	3.5	2.0	..5	..5	1.2	13.6	9.8	114
..	1	55	146	1.3	..1	..	1.0	..8	..3	..04	2.1	5.6	6.6	115
..	1	153	437	3.8	..8	..	5.0	1.1	1.2	..04	6.5	18.7	20.9	116
..	2	48	190	4.3	..	..	2.6	1.7	..6	..1	3.2	12.6	9.8	117
41	1,636	22,218	75,066	2.3	..5	..001	5.3	2.8	5.5	..5	7.1	24.1	23.7	
467	20,302	161,240	1,189,015	2.9	..9	..0001	16.1	..7	..9	..4	3.5	25.5	25.3	

Supplementary Annual Form No. VI (A).—Deaths registered from DIFFERENT

1	2			3		4		5		6		7		8	
				Malaria.		Enteric fever.		Measles.		Relapsing fever.		Kala-azar.		Other fevers.	
				Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
	DISTRICTS (EXCLUDING TOWNS).														
	BURDWAN DIVISION.														
1	Burdwan .. ..	..	..	11,590	8·6	105	·1	84	·1	37	·03	131	·1	11,803	8·8
2	Birbhum .. ..	..	..	5,102	5·4	379	·4	33	·03	70	·1	17	·02	12,888	13·7
3	Bankura .. ..	..	..	7,123	7·4	149	·1	77	·1	94	·1	26	·03	7,547	7·8
4	Midnapur .. ..	..	..	17,350	6·7	145	·1	60	·02	83	·03	46	·02	20,603	7·9
5	Hooghly .. ..	..	..	9,976	11·1	622	·7	64	·1	107	·1	176	·2	3,982	4·4
6	Howrah .. ..	..	..	2,991	3·8	335	·4	58	·1	107	·1	262	·3	3,833	4·9
	PRESIDENCY DIVISION.														
7	24-Parganas .. ..	..	..	6,342	3·2	271	·1	84	·04	187	·1	1,374	·7	15,953	8·0
8	Nadia .. ..	..	..	23,146	16·6	88	·1	56	·04	185	·1	343	·2	4,653	3·3
9	Murshidabad .. ..	..	..	19,978	16·9	19	·02	19	·02	5	·004	32	·03	2,051	1·7
10	Jessore .. ..	..	..	36,334	21·4	107	·1	4	·002	51	·03	137	·1	4,709	2·8
11	Khulna .. ..	..	..	11,011	7·7	605	·4	50	·03	120	·1	619	·4	5,918	4·2
	RAJSHAHI DIVISION.														
12	Rajshahi .. ..	..	..	34,125	23·4	1	·001	7	·005	..	..	41	·03	1,159	·8
13	Dinajpur .. ..	..	..	44,053	26·1	48	·03	25	·01	3	·002	133	·1	7,272	4·3
14	Jalpaiguri .. ..	..	..	20,581	22·3	8	·01	7	·01	3	·003	26	·03	933	1·0
15	Darjeeling .. ..	..	..	2,708	10·7	19	·1	16	·1	3	·01	46	·2	2,922	11·5
16	Rangpur .. ..	..	..	34,751	14·0	1,594	·6	179	·1	541	·2	499	·2	20,255	8·2
17	Bogra .. ..	..	..	9,216	8·9	155	·1	34	·03	114	·1	446	·4	6,019	5·8
18	Pabna .. ..	..	..	18,421	13·7	157	·1	66	·05	112	·1	110	·1	3,029	2·2
19	Malda .. ..	..	..	19,413	20·3	8	·01	4	·004	..	..	2	·002	218	·2
	DACCA DIVISION.														
20	Dacca .. ..	..	..	4,915	1·6	1,700	·6	191	·1	415	·1	1,223	·4	26,302	8·8
21	Mymensingh .. ..	..	..	3,099	·7	213	·04	95	·02	188	·04	694	·1	56,447	12·0
22	Faridpur .. ..	..	..	16,014	7·3	551	·2	177	·1	306	·1	996	·4	16,585	7·5
23	Bakarganj .. ..	..	..	748	·3	8	·003	..	..	1	·0004	125	·05	36,699	14·3
	CHITTAGONG DIVISION.														
24	Chittagong .. ..	..	..	634	·4	58	·04	24	·01	427	·3	281	·2	33,656	21·4
25	Noakhali .. ..	..	..	509	·3	57	·04	10	·01	295	·2	267	·2	22,848	15·6
26	Tippera .. ..	..	..	4,294	1·6	565	·2	89	·03	351	·1	1,531	·6	19,793	7·4
	Total of Districts			364,424	8·4	7,967	·2	1,513	·03	3,805	·1	9,583	·2	348,077	8·0
	TOWNS.														
	BURDWAN DISTRICT.														
1	Burdwan .. ..	..	..	89	2·6	30	·9	3	·1	..	..	40	1·1	12	·3
2	Kalna .. ..	..	..	29	3·4	..	..	..	..	..	..	4	·5	92	10·9
3	Katwa .. ..	..	..	14	2·0	4	·6	..	..	1	·1	..	..	10	1·5
4	Dainhat .. ..	..	..	26	5·4	..	..	..	..	..	..	..	..	1	·2
5	Raniganj .. ..	..	..	3	·2	..	..	..	..	..	..	..	..	63	4·3
6	Asansol .. ..	..	..	..	..	..	..	..	..	..	..	..	..	17	·6
	BIRBHUM DISTRICT.														
7	Suri .. ..	..	..	..	..	..	..	..	..	..	..	..	..	40	4·5
	BANKURA DISTRICT.														
8	Bankura .. ..	..	..	8	·3	2	·1	4	·2	..	..	..	..	52	2·0
9	Vishnupur .. ..	..	..	93	4·8	..	..	13	·7	..	..	..	..	66	3·4
10	Sonamukhi .. ..	..	..	11	1·0	1	·1	1	·1	..	..	..	..	36	3·4
	MIDNAPUR DISTRICT.														
11	Midnapur .. ..	..	..	1	·03	..	..	1	·03	..	..	1	·03	87	3·0
12	Ghatal .. ..	..	..	18	1·7	..	..	..	..	..	..	..	..	34	3·1
13	Kharar .. ..	..	..	4	·6	..	..	..	..	..	..	..	..	13	2·0
14	Chandrakona .. ..	..	..	5	·8	..	..	..	..	..	..	10	1·5	42	6·5
15	Ramjibanpur .. ..	..	..	21	3·1	1	·1	..	..	..	..	2	·3	11	1·6
16	Khirpai .. ..	..	..	19	5·1	..	..	1	·3	..	..	..	..	12	3·2
17	Tamluk .. ..	..	..	1	·1	..	..	..	·	1	·1	1	·1	24	2·9
	HOOGHLY DISTRICT.														
18	Hooghly-Chinsura .. ..	..	..	24	·8	27	·9	1	·03	..	..	19	·6	226	7·5
19	Bansberia .. ..	..	..	12	1·9	1	·2	..	..	..	..	2	·3	48	7·5
20	Arambagh .. ..	..	..	55	7·0	..	..	..	..	..	..	1	·1	..	..
21	Serampur .. ..	..	..	11	·3	21	·6	2	·1	..	..	4	·1	59	1·8
22	Rishra-Konnagar .. ..	..	..	5	·2	2	·1	1	·04	..	..	..	..	45	1·9
23	Uttarpara .. ..	..	..	4	·5	3	·3	1	·1	..	..	3	·3	22	2·5
24	Kotrung .. ..	..	..	..	..	..	..	..	..	..	..	..	..	20	2·9
25	Baidyabati .. ..	..	..	3	·2	..	..	2	·1	..	..	1	·1	102	·6
26	Bhadreswar .. ..	..	..	11	·5	1	·04	1	·04	6	·3	1	·04	115	5·2
27	Champdani .. ..	..	..	5	·2	..	..	..	..	2	·1	1	·04	57	2·3

CAUSES in the districts and towns of the Bengal Presidency during the year 1928.

9		10		11		12		13		14		15	16			17	18
Dysentery.		D'arrhoea.		Influenza.		Pneumonia.		Phthisis.		Other respira- tory diseases.		Deaths from child-birth.*	Deaths under one year.			Infant mortality rate.	Number.
Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.		Male.	Female.	Total.		
346	·3	805	·6	122	·1	1,474	1·1	369	·3	336	·2	249	4,120	3,422	7,542	187·8	1
160	·2	112	·1	35	·04	190	·2	153	·2	320	·3	163	3,310	2,752	6,062	191·7	2
331	·3	725	·7	127	·1	795	·8	361	·4	398	·4	218	3,181	2,633	5,814	171·2	3
821	·3	620	·2	72	·03	1,188	·5	351	·1	322	·1	372	6,144	5,671	11,815	150·9	4
329	·4	897	1·0	90	·1	1,432	1·6	332	·4	293	·3	129	2,357	2,139	4,496	186·7	5
416	·5	1,768	2·3	177	·2	681	·9	484	·6	578	·7	141	2,208	1,781	3,989	176·6	6
454	·2	441	·2	63	·03	1,076	·5	410	·2	441	·2	258	4,449	3,744	8,193	144·6	7
167	·1	123	·1	115	·1	632	·4	263	·2	299	·2	196	5,212	4,713	9,925	209·3	8
26	·02	21	·02	3	·002	51	·04	17	·01	15	·01	68	4,601	3,790	8,391	162·8	9
111	·1	71	·04	9	·005	147	·1	126	·1	93	·05	137	3,582	3,390	6,972	177·9	10
298	·2	225	·2	17	·01	261	·2	207	·1	285	·2	326	4,511	3,911	8,422	181·6	11
68	·05	40	·03	4	·003	25	·02	15	·01	31	·02	114	4,939	4,555	9,494	204·4	12
57	·03	62	·04	10	·01	105	·1	37	·02	95	·1	236	6,832	6,110	12,942	212·3	13
381	·4	524	·6	179	·2	562	·6	331	·4	114	·1	231	3,172	2,872	6,044	191·3	14
366	1·4	161	·6	42	·2	151	·6	115	·4	69	·3	27	768	701	1,469	154·8	15
593	·2	388	·2	36	·01	298	·1	178	·1	238	·1	904	10,003	8,588	18,591	234·3	16
201	·2	201	·2	96	·1	79	·1	100	·1	118	·1	292	3,049	2,673	5,722	192·6	17
121	·1	79	·1	10	·01	99	·1	83	·1	105	·1	135	3,092	2,647	5,739	186·9	18
7	·01	8	·01	..	..	13	·01	15	·01	11	·01	64	2,619	2,283	4,902	153·1	19
2,452	·8	903	·3	156	·05	295	·1	400	·1	714	·2	419	8,107	6,922	15,029	168·1	20
1,672	·3	647	·1	29	·01	152	·03	405	·1	373	·1	584	12,363	10,381	22,744	178·4	21
1,391	·6	915	·4	83	·04	911	·4	366	·2	994	·4	518	6,907	5,737	12,644	186·8	22
787	·3	172	·1	46	·02	128	·05	106	·04	70	·03	145	6,778	5,742	12,520	171·7	23
387	·2	247	·2	21	·01	103	·1	41	·03	47	·03	86	3,795	3,400	7,195	157·4	24
584	·4	371	·2	3	·002	5	·003	9	·01	207	·1	280	3,488	3,099	6,587	134·7	25
1,166	·4	519	·2	99	·04	144	·05	246	·1	403	·1	419	4,908	3,937	8,845	129·8	26
13,692	·3	11,045	·2	1,644	·04	10,997	·2	5,520	·1	6,969	·2	6,711	124,495	107,593	232,088	176·8	..
93	2·7	68	2·0	4	·1	112	3·2	30	·9	58	1·7	25	19	22	41	126·9	1
15	1·8	11	1·3	..	..	31	3·7	7	·8	9	1·1	..	19	21	40	202·0	2
5	·7	3	·4	..	..	8	1·2	1	·1	2	·3	..	11	3	14	186·6	3
..	..	1	·2	..	..	6	1·2	4	·8	..	..	..	8	4	12	176·4	4
11	·7	6	·4	1	·1	18	1·2	7	·5	27	1·8	3	29	21	50	142·8	5
2	·1	..	..	..	..	19	·7	7	·3	4	·1	12	33	34	67	145·0	6
1	·1	..	..	..	..	13	1·4	7	·8	10	1·1	1	9	8	17	125·0	7
7	·3	9	·3	..	..	25	1·0	7	·3	15	·6	4	31	15	46	101·7	8
3	·1	30	1·5	..	..	14	·7	3	·1	24	1·2	6	31	28	59	126·9	9
11	1·0	6	·6	1	·1	12	1·1	3	·3	11	1·0	2	24	21	45	134·3	10
17	·6	19	·7	..	..	54	1·9	12	·4	14	·5	..	14	14	28	48·1	11
5	·5	34	3·1	..	..	44	4·1	3	·3	10	·9	..	20	16	36	103·4	12
2	·3	16	2·4	..	..	14	2·1	6	·9	16	2·4	12	8	7	15	144·2	13
1	·1	15	2·3	1	·1	36	5·6	3	·5	17	2·6	2	16	15	31	238·4	14
3	·4	28	4·2	10	1·5	37	5·5	2	·3	21	3·1	10	8	8	16	104·5	15
..	..	17	4·5	..	..	30	8·0	..	..	3	·8	..	6	10	16	202·5	16
9	1·1	6	·7	..	..	5	·6	5	·6	1	·1	..	4	6	10	58·1	17
51	1·7	79	2·6	1	·03	81	2·7	17	·6	15	·5	16	108	69	177	205·5	18
7	1·1	10	1·6	1	·2	10	1·6	3	·5	5	·8	1	6	12	18	225·0	19
6	·8	17	2·2	..	..	29	3·7	7	·9	2	·2	3	21	11	32	202·5	20
63	1·9	70	2·1	..	..	40	1·2	37	1·1	28	·8	7	43	34	77	120·7	21
15	·6	38	1·6	..	..	12	·5	12	·5	9	·4	..	34	15	49	138·8	22
22	2·5	10	1·1	3	·3	12	1·4	11	1·3	11	1·3	..	13	9	22	113·4	23
9	1·3	12	1·7	..	..	6	·9	..	..	4	·6	1	13	6	19	137·7	24
15	·9	75	4·5	..	..	17	1·0	13	·8	3	·2	6	20	26	46	125·3	25
13	·6	33	1·5	1	·04	13	·6	5	·2	14	·6	4	33	28	61	200·0	26
5	·2	25	1·0	12	·5	9	·4	3	·1	21	·8	2	22	10	32	94·4	27

* Deaths during or within 14 days of labour.

Supplementary Annual Form No. VI(A)—Deaths registered from DIFFERENT

1	2			3		4		5		6		7		8	
				Malaria.		Enteric fever.		Measles.		Relapsing fever.		Kala-azar.		Other Fevers.	
				Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
Number.	Districts and towns.														
	HOWRAH DISTRICT.														
28	Howrah .. ..	..	..	190	1·0	100	·5	18	·1	13	·1	67	·3	693	3·5
29	Bally .. ..	..	..	15	·6	5	·2	2	·1	2	·1	5	·2	94	4·0
24-PARGANAS DISTRICT.															
30	South Suburban .. ..	..	..	101	3·0	40	1·2	2	·1	..	..	7	·2	122	3·7
31	Tallyganj .. ..	..	..	7	·3	8	·4	3	·1	1	·05	..	..	109	5·0
32	Budge-Budge .. ..	..	..	6	·2	1	·04	..	..	..	..	1	·04	95	3·7
33	Baranagar .. ..	..	..	6	·2	18	·6	3	·1	..	..	16	·5	65	2·0
34	Kamarhati .. ..	..	..	3	·1	1	·04	2	·1	1	·04	11	·5	75	3·3
35	Rajpur .. ..	..	..	11	1·0	3	·3	..	..	..	..	4	·3	44	3·8
36	Baruipur .. ..	..	..	5	1·0	1	·2	..	..	..	..	..	..	20	3·9
37	Jaynagar .. ..	..	..	6	·7	4	·5	..	..	..	..	3	·3	37	4·4
38	North Dum Dum .. ..	..	..	..	..	1	·1	..	..	1	·1	2	·2	16	1·9
39	South Dum Dum .. ..	..	..	16	1·1	2	·1	1	·1	..	..	..	..	25	1·8
40	Khardah .. ..	..	..	..	..	..	..	..	..	..	..	..	..	22	4·0
41	Barrackpur .. ..	..	..	12	·5	1	·04	..	..	3	·1	..	..	25	1·1
42	Panihati .. ..	..	..	10	1·0	..	..	..	..	2	·2	7	·7	14	1·4
43	North Barrackpur .. ..	..	..	11	·7	1	·1	1	·1	..	..	6	·4	27	1·7
44	Titagarh .. ..	..	..	..	..	..	..	..	..	..	..	..	..	619	11·8
45	Garulla .. ..	..	..	54	4·1	..	..	..	..	..	..	..	..	..	..
46	Naihati .. ..	..	..	1	·04	1	·04	..	..	..	..	..	..	37	1·6
47	Halisahar .. ..	..	..	31	4·2	1	·1	..	..	..	..	1	·1	..	..
48	Kanchrapara .. ..	..	..	..	..	5	·5	..	..	2	·2	2	·2	85	8·2
49	Bhatpara .. ..	..	..	17	·3	14	·2	5	·1	..	..	2	·03	434	6·6
50	Barasat .. ..	..	..	30	3·6	..	..	..	..	3	·4	..	..	6	·7
51	Gobardanga .. ..	..	..	38	7·4	..	..	..	..	..	..	1	·2	1	·2
52	Basirhat .. ..	..	..	11	·6	6	·3	..	..	..	..	13	·7	69	3·6
53	Baduria .. ..	..	..	25	1·8	..	..	..	..	..	..	1	·1	50	3·5
54	Taki .. ..	..	..	10	1·9	..	..	..	..	..	..	..	..	25	4·8
CITY OF CALCUTTA.															
55	Calcutta .. ..	..	..	1,345	1·2	866	·8	277	·3	..	..	514	·5	1,796	1·7
NADIA DISTRICT.															
56	Krishnagar .. ..	..	..	40	1·8	3	·1	..	..	..	..	2	·1	49	2·2
57	Nabadwip .. ..	..	..	11	·7	2	·1	1	·1	..	..	2	·1	76	4·9
58	Ranaghat .. ..	..	..	61	6·3	..	..	..	..	..	..	1	·1	..	..
59	Birnagar .. ..	..	..	16	6·9	..	..	..	..	..	..	..	..	..	..
60	Santipur .. ..	..	..	168	6·8	3	·1	..	..	4	·2	3	·1	89	3·6
61	Chakdaha .. ..	..	..	54	10·3	..	..	..	..	..	..	..	..	..	..
62	Kushtia .. ..	..	..	3	·4	..	..	..	..	..	..	..	..	18	2·3
63	Kumarkhali .. ..	..	..	24	6·4	..	..	..	..	..	..	4	1·1	5	1·3
64	Meherpur .. ..	..	..	9	1·7	..	..	..	..	1	·2	..	..	14	2·6
MURSHIDABAD DISTRICT.															
65	Berhampur .. ..	..	..	125	4·7	21	·8	..	..	..	..	17	·6	145	5·4
66	Murshidabad .. ..	..	..	..	..	1	·1	..	..	..	..	2	·2	136	12·7
67	Jiaganj-Azimganj .. ..	..	..	91	8·1	..	..	..	..	..	..	4	·3	4	·3
68	Kandi .. ..	..	..	6	·5	..	..	1	·1	..	..	..	..	111	9·4
69	Jangipur .. ..	..	..	..	..	..	..	..	..	..	..	..	..	94	8·7
70	Dhulian .. ..	..	..	112	13·3	..	..	..	..	..	..	..	..	..	..
JESSORE DISTRICT.															
71	Jessore .. ..	..	..	96	9·5	..	..	..	..	..	..	6	·6	2	·2
72	Kotehandpur .. ..	..	..	115	15·2	..	..	..	..	..	..	..	..	4	·5
73	Maheshpur .. ..	..	..	39	10·8	..	..	..	..	..	..	4	1·1	6	1·7
KHULNA DISTRICT.															
74	Khulna .. ..	..	..	109	6·8	1	·1	..	..	..	..	4	·2	9	·6
75	Satkhira .. ..	..	..	27	2·6	..	..	..	..	..	..	25	2·4	23	2·2
76	Debhatta .. ..	..	..	8	1·4	..	..	..	..	..	..	3	·5	12	2·1
RAJSHAHI DISTRICT.															
77	Rajshahi .. ..	..	..	34	1·4	3	·1	..	..	..	..	10	·4	76	3·1
78	Nator .. ..	..	..	34	4·2	..	..	..	..	..	..	1	·1	19	2·4
DINAJPUR DISTRICT.															
79	Dinajpur .. ..	..	..	5	·3	..	..	..	..	..	..	7	·4	66	3·7
JALPAIGURI DISTRICT.															
80	Jalpaiguri .. ..	..	..	56	3·9	..	..	..	..	..	..	12	·8	4	·3

CAUSES in the districts and towns of the Bengal Presidency during the year 1928.

9		10		11		12		13		14		15	16			17	18
Dysentery.		Diarrhoea.		Influenza.		Pneumonia.		Phthisis.		Other respira- tory diseases.		Deaths from child-birth.*	Deaths under one year.			Infant mortality rate.	Number.
Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.		Male.	Female.	Total.		
655 38	3·3 1·6	435 22	2·2 ·9	.. 3	.. ·1	820 24	4·2 1·0	232 12	1·2 ·5	847 11	4·3 ·5	34 1	707 26	671 15	1,378 41	286·8 109·6	28 29
66 48 112 119 63 6 9 18 6 30 20 12 8 32 7 10 14 .. 3 39 4 9 13 .. 10	2·0 2·2 4·3 3·7 2·7 ·5 1·8 2·1 ·7 2·1 3·6 ·5 ·8 2·1 ·1 ·8 ·6 .. ·3 ·6 ·5 ·7 .. 1·9	43 19 2 66 29 4 .. 10 16 7 .. 14 12 7 37 .. 13 8 8 84 4 9 18	1·3 ·9 ·1 2·1 1·3 ·3 .. 1·2 1·9 ·5 ·6 1·2 ·4 ·7 .. ·6 1·1 ·8 1·3 ·5 1·8 ·9	1 3 2 4 5 1 3 .. 1 2 6 1	·03 ·1 ·1 ·1 ·2 ·1 ·1 ·1 ·04 ·1 ·1	66 21 10 50 21 29 16 6 19 38 .. 17 31 25 2 21 8 3 69 5 32 39 4 2	2·0 1·0 ·4 1·6 ·9 2·5 3·1 ·7 2·3 2·7 .. ·7 3·0 1·6 ·04 ·9 1·1 ·3 1·0 ·6 6·3 2·0 ·3 ·4	29 8 4 31 10 5 2 6 .. 7 2 5 11 8 .. 3 5 .. 19 .. 7 10 .. 8	·9 ·4 ·1 1·0 ·4 ·4 ·7 .. ·5 ·2 ·4 1·1 ·5 .. ·2 .. ·5 ·3 1·4 ·5 .. 1·5	39 15 22 16 23 2 2 17 3 12 13 10 1 12 9 13 12 11 35 1 .. 4 .. 12	1·2 ·7 ·8 ·5 1·0 ·2 ·4 2·0 ·4 2·4 ·4 ·1 ·1 ·8 ·2 1·0 ·5 1·5 ·1 ·5 ·1 ·2 .. 2·3	21 4 3 7 .. 1 2 .. 1 .. 2 1 5 23 1 5 12	81 34 5 63 16 19 6 5 11 31 8 7 29 26 24 17 28 8 5 96 5 .. 41 7 12	74 33 3 47 16 17 5 7 6 21 4 19 12 27 20 9 63 8 6 .. 36 2 19	155 67 8 110 32 36 11 12 17 52 12 14 48 38 51 29 48 38 13 159 11 .. 77 9 31	189·2 152·2 34·2 140·3 81·0 146·9 200·0 160·0 132·8 157·1 123·7 74·9 170·8 128·3 79·2 169·6 135·2 170·0 44·4 129·7 107·8 .. 52·3 184·5	30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
1,802	1·7	1,825	1·7	481	·4	4,370	4·1	2,600	2·4	3,182	2·9	92	3,211	2,858	6,069	275·9	55
11 26 24 5 63 9 7 2 3	·5 1·7 2·5 2·2 2·5 1·7 ·9 ·5 ·5	2 19 5 .. 36 .. 4 3 1	·1 1·2 ·5 .. 1·4 .. ·5 ·8 ·2	.. .. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. .. ..	13 11 20 4 57 7 4 10 4	·6 ·7 2·1 1·7 2·3 1·3 ·5 2·7 ·7	3 9 15 .. 1 1 2	·1 ·6 ·6 .. ·1 ·3 ·4	13 11 .. 6 27 2 3 2 ..	·6 ·7 .. 2·6 1·1 ·4 ·4 ·5 ..	3 1 10 .. 1 1 1	15 28 10 13 30 4 6 4 5	17 14 5 6 42 3 5 4 5	32 42 15 19 72 7 11 8 10	95·8 161·5 88·2 263·8 123·0 106·0 122·2 111·1 71·4	56 57 58 59 60 61 62 63 64
59 7 7 7 5 1	2·2 ·7 ·6 ·6 ·5 ·1	9 6 5 5 1 ..	·3 ·6 ·4 ·4 ·1 ..	2 1	·1 ·1	47 24 12 9 5 4	1·8 2·2 1·1 ·8 ·5 ·5	31 3 5 2 .. 2	1·2 ·3 ·4 ·2 .. ·2	13 .. 8 5 .. 1	·5 .. ·7 ·4 .. ·1	9 .. 4 2 3 ..	59 20 27 14 10 17	33 27 22 6 8 9	92 47 49 20 18 26	176·9 246·0 215·8 100·0 61·2 102·8	65 66 67 68 69 70
17 7 1	1·7 ·9 ·3	4 4 ..	·4 ·5 ..	.. .. ..	.. .. ..	27 1 8	2·7 ·1 2·2	3 1 1	·3 ·1 ·3	1 8 4	·1 1·1 1·1	.. 1 ..	3 10 9	3 2 5	6 12 14	39·5 206·9 350·0	71 72 73
18 7 12	1·1 ·7 2·1	14 5 3	·9 ·5 ·5	.. 1 1	.. ·1 ·2	21 31 1	1·3 3·0 ·2	7 9 ..	·4 ·9 ..	3 4 3	·2 ·4 ·5	.. 10 1	10 23 2	7 13 3	17 36 5	92·4 156·5 57·5	74 75 76
15 3	·6 ·4	4 4	·2 ·5	.. 1	.. ·1	22 25	·9 3·1	19 5	·8 ·6	1 3	·04 ·4	1 ..	41 18	30 14	71 32	127·0 206·4	77 78
17	·9	3	·2	..	..	21	1·2	3	·2	4	·2	..	10	6	16	136·7	79
12	·8	6	·4	..	..	33	2·3	19	1·3	14	1·0	..	5	5	10	35·0	80

* Deaths during or within 14 days of labour.

Supplementary Annual Form No. VI (A.)—Deaths registered from DIFFERENT

1 Number.	2 Districts and towns.			3		4		5		6		7		8	
				Malaria.		Enteric fever.		Measles.		Relapsing Fever.		Kala-azar		Other Fevers.	
				Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
DARJEELING DISTRICT.															
81	Darjeeling	20	.9	4	.2	..	..	..	..	1	.1	16	.7	50	2.2
82	Kurseong	5	.8	..	..	..	..	..	..	..	..	4	.6	148	2.3
RANGPUR DISTRICT.															
83	Rangpur	8	.4	14	.7	..	..	..	..	1	.05	13	.7	45	2.4
84	Gaibandha	7	1.1	..	..	..	..	..	..	..	..	2	.3	7	1.1
BOGRA DISTRICT.															
85	Bogra	9	.7	3	.2	1	.1	..	..	..	..	8	.6	11	.9
86	Sherpur	21	5.3	3	.7	..	..	..	..	..	..	3	.7	13	3.3
PABNA DISTRICT.															
87	Pabna	96	5.0	..	..	..	..	..	..	..	..	2	.1	..	..
88	Sirajganj	187	7.3	..	..	..	..	..	..	..	..	..	..	15	.6
MALDA DISTRICT.															
89	English Bazar	18	1.3	..	..	..	..	..	..	..	..	1	.1	36	2.6
90	Old Malda	18	5.7	1	.3	..	..	..	..	..	..	..	..	11	3.5
91	Nawabganj	54	4.3	..	..	1	.1	1	.1	..	..	1	.1	73	5.8
DACCA DISTRICT.															
92	Dacca	15	.1	59	.5	12	.1	..	..	..	..	142	1.2	417	3.5
93	Narayanganj	1	.03	..	..	7	.2	..	..	..	..	..	..	274	8.9
MYMENSINGH DISTRICT.															
94	Mymensingh .. ..	..	..	..	..	..	..	..	..	..	..	2	.1	225	8.9
95	Muktagacha .. ..	..	..	..	..	..	..	..	..	..	..	1	.1	23	3.4
96	Netrakona	25	2.9	1	.1	..	..	..	..	..	..	..	..	22	2.5
97	Jamalpur	33	1.4	6	.3	..	..	..	..	..	..	52	2.2	95	4.1
98	Sherpur	2	.1	1	.1	..	..	..	..	..	..	7	.4	67	3.8
99	Kishorganj .. ..	..	..	..	..	1	.05	..	..	..	..	1	.05	46	2.3
100	Bajitpur	2	.2	..	..	..	..	..	..	..	..	..	..	31	2.7
101	Tangail	3	.2	..	..	..	..	..	..	1	.1	5	.3	90	6.3
102	Gauripur	2	.3	..	..	..	..	..	..	..	..	..	..	30	4.0
FARIDPUR DISTRICT															
103	Faridpur	44	3.0	1	.1	..	..	..	..	..	..	4	.3	41	2.8
104	Madaripur	3	.1	3	.1	..	..	..	..	..	..	13	.5	64	2.5
105	Rajbari .. ..	..	..	..	..	..	..	..	..	..	..	..	..	97	13.3
BAKARGANJ DISTRICT.															
106	Barisal .. ..	..	..	..	.1	..	..	..	..	..	..	6	.2	186	6.9
107	Jhalakati	1	.2	..	..	..	..	..	..	..	..	1	.2	7	1.2
108	Nalchiti	3	1.6	..	..	..	..	..	..	..	..	..	..	5	2.7
109	Pirojpur	1	.1	..	..	1	.1	..	..	..	..	..	..	40	2.9
110	Patuakhali .. ..	..	..	..	..	..	..	..	..	..	..	5	.7	15	2.1
111	Bhola	1	.2	..	..	..	..	..	..	..	..	..	..	7	1.5
CHITTAGONG DISTRICT.															
112	Chittagong	8	.2	25	.7	1	.03	1	.03	1	.03	3	.1	160	4.4
113	Cox's Bazar .. ..	..	..	..	..	..	..	..	..	..	..	..	..	36	7.8
NOAKHALI DISTRICT.															
114	Noakhali .. ..	..	..	..	..	..	..	7	.9	6	.8	14	1.8	..	..
TIPPERA DISTRICT.															
115	Comilla .. ..	..	..	..	..	..	..	..	..	..	..	2	.1	24	.9
116	Brahmanbaria	2	.1	..	..	..	..	..	..	..	..	2	.1	114	4.9
117	Chandpur	2	.1	..	..	..	..	..	..	..	..	1	.1	37	2.4
Total of towns				4,267	1.4	1,330	.4	371	.1	54	.02	1,163	.4	9,449	3.0
TOTAL FOR THE BENGAL PRESIDENCY				368,691	7.9	9,297	.2	1,884	.04	3,859	.1	10,746	.2	357,526	7.7

CAUSES in the districts and towns of the Bengal Presidency during the year 1928.

9		10		11		12		13		14		15	16			17	18
Dysentery.		Diarrhoea.		Influenza.		Pneumonia.		Phthisis.		Other respira- tory diseases.		Deaths from child-birth.*	Deaths under one year.			Infant morta- lity rate.	Number.
Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.		Male.	Female.	Total.		
3 7	.1 1.1	3 3	.1 .5	4 1	.2 .1	38 20	1.7 3.1	63 18	2.8 2.8	5 5	.2 .8	.. ..	23 25	23 16	46 41	80.8 146.4	81 82
36 10	1.9 1.6	8 3	.4 .5	2 ..	.1 ..	9 6	.5 1.0	1 1	.05 .2	4 2	.2 .3	10 2	23 4	12 1	35 5	110.7 72.4	83 84
4 1	.3 .2	6 3	.5 .7	.. ..	.. ..	12 4	1.0 1.0	3 3	.2 .7	1 3	.1 .7	.. 1	7 3	4 9	11 12	98.2 157.1	85 86
17 9	.9 .3	2 9	.1 .3	.. ..	.. ..	5 ..	.3 ..	3 4	.1 .2	8 10	.4 .4	.. ..	17 29	16 27	33 56	160.9 111.8	87 88
13 2 13	.9 .6 1.0	3 5 9	.2 1.6 .7	.. .. ..	.. .. ..	14 2 14	1.0 .6 1.1	1 1 2	.1 .3 .2	8 3 34	.6 .9 2.7	.. 1 1	10 6 33	13 4 31	23 10 64	67.0 175.4 140.0	89 90 91
398 67	3.3 2.2	130 27	1.1 .9	18 5	.1 .2	384 15	3.2 .5	97 15	.8 .5	276 8	2.3 .3	62 6	560 154	467 125	1,027 279	237.7 268.2	92 93
11 2 14 11 23 14 5 11 4	.4 .3 1.6 .5 1.3 .7 .4 .8 .5	24 3 10 5 11 32 9 7 2	.9 .4 1.1 .2 .6 1.6 .8 .5 .3	2 .. 1............	.1 .. .1	10 3 2 20 1 .. 1 19 ..	.4 .4 .2 .9 .1 .. .1 1.3 ..	3 2 2 3 5 1 6....	.1 .3 .2 .1 .3 .05 .5	16 .. 4 14 6 20 .. 5 4	.6 .. .5 .6 .3 1.0 .. .3 .5	3 4 3 14 .. 2 1 3	50 11 21 45 31 19 15 23 5	36 9 26 32 20 9 12 23 5	86 20 47 77 51 28 27 46 10	189.8 210.5 201.7 136.5 93.2 133.3 180.0 194.9 200.0	94 95 96 97 98 99 100 101 102
17 40 6	1.2 1.6 .8	7 12 12	.5 .5 1.6	.. .. ..	.. .. ..	15 2 7	1.0 .1 1.0	3 1 1	.2 .04 .1	3 8 1	.2 .3 .1	4 4 1	21 30 11	26 25 13	47 55 24	203.4 109.5 152.8	103 104 105
54 3 7 2 4 3	2.0 .5 3.8 .1 .6 .7	1 .. 1 1 1 ..	.04 .. .5 .1 .1 ..	3 2 .. 1 1 2	.1 .3 .. .1 .1 .4	11 5 1 8 2 4	.4 .8 .5 .6 .3 .9	3 3 .. 1 .. 1	.1 .5 .. .1 .. .2	4 2 .. 1 2 1	.1 .3 .. .1 .3 .2	.. .. .. 4	53 6 2 16 6 1	35 4 .. 15 4 1	88 10 2 31 10 2	217.8 188.6 100.0 128.1 131.6 43.5	106 107 108 109 110 111
63 2	1.7 .4	2 1	.05 .2	1 ..	.03 ..	32 4	.9 .9	6 1	.2 .2	9 ..	.2 ..	4 ..	85 4	90 3	175 7	189.8 98.6	112 113
11	1.4	5	.6	1	.1	..	..	..	..	3	.4	2	8	10	18	257.1	114
14 15 18	.5 .6 1.2	8 13 8	.3 .5 .5	.. .. ..	.. .. ..	6 3 5	.2 .1 .3	.. 4 3	.. .2 .2	1 21 1	.04 .2 .2	.. .. 2	9 52 16	11 44 14	20 96 30	80.3 133.1 162.1	115 116 117
4,823	1.5	3,859	1.2	598	.2	7,560	2.4	3,646	1.2	5,308	1.7	515	6,958	5,999	12,957	204.1	
18,515	.4	14,904	.3	2,242	.05	18,557	.4	9,166	.2	12,277	.3	7,226	131,453	113,592	245,045	178.1	

* Deaths during or within 14 days of labour.

Annual Form No. VII.—Deaths registered from CHOLERA in the

1	2			3		4		5					
				Circles of Registration.		Villages.		January.	February.	March.	April.	May.	June.
	Districts.			Number in each district.	Number from which deaths from cholera were reported.	Number in each district.	Number from which deaths from cholera were reported.						
	<i>Burdwan Division.</i>												
1	Burdwan	..	..	29	28	2,817	833	343	711	1,240	438	321	97
2	Birbhum	..	..	15	15	2,302	1,507	200	187	388	262	358	248
3	Bankura	..	..	22	22	4,003	191	19	27	193	52	59	38
4	Midnapur	..	..	33	33	10,351	1,146	346	585	861	1,207	955	315
5	Hooghly	..	..	26	26	2,197	569	314	133	371	413	321	320
6	Howrah	..	..	13	13	863	244	399	472	746	1,104	535	285
	<i>Presidency Division.</i>												
7	24-Parganas	..	..	62	61	3,427	1,753	2,341	1,969	2,719	1,996	1,157	522
8	Calcutta	..	..	1	1	1	1	101	165	455	452	464	354
9	Nadia	..	..	30	30	2,353	906	1,166	618	809	749	238	47
10	Murshidabad	..	..	26	25	1,974	716	619	749	987	580	201	53
11	Jessore	..	..	27	27	3,613	616	856	388	498	654	347	57
12	Khulna	..	..	25	25	2,011	712	920	514	833	830	440	117
	<i>Rajshahi Division.</i>												
13	Rajshahi	..	..	26	26	4,487	1,307	1,110	401	1,004	2,779	875	70
14	Dinajpur	..	..	31	28	6,612	343	193	45	120	118	90	45
15	Jalpaiguri	..	..	18	15	722	80	13	1	4	65	148	77
16	Darjeeling	..	..	6	3	304	35	..	..	2	1	..	27
17	Rangpur	..	..	32	32	4,102	..*	290	175	161	283	374	159
18	Bogra	..	..	14	14	2,780	325	205	49	35	27	43	5
19	Pabna	..	..	19	19	2,539	425	103	51	101	617	282	58
20	Malda	..	..	18	17	2,239	113	154	29	75	187	379	105
	<i>Dacca Division.</i>												
21	Dacca	..	..	14	14	4,737	1,840	1,125	420	1,592	4,169	1,535	371
22	Mymensingh	..	..	60	60	7,354	1,744	2,290	786	1,129	1,990	1,452	542
23	Faridpur	..	..	17	17	3,363	1,976	684	364	1,826	2,712	1,026	175
24	Bakarganj	..	..	22	22	2,990	1,209	1,462	521	1,705	2,100	1,152	267
	<i>Chittagong Division.</i>												
25	Chittagong	..	..	22	22	870	339	338	269	470	872	796	263
26	Noakhali	..	..	15	15	1,719	819	1,035	365	472	658	508	312
27	Tippera	..	..	15	15	4,018	1,625	961	720	1,149	1,353	798	308
	Total for the Bengal Presidency			638	625	84,748	21,374	17,587	10,714	19,945	26,668	14,854	5,237

* Information not furnished.

istricts of the Bengal Presidency during each month of the year 1928.

						6			7			8	9
July.	August.	Septem-ber.	October.	Novem-ber.	Deecem-ber.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 during pre-vious five years.	Number.
						Male.	Female.	Total.	Male.	Female.	Total.		
102	83	50	6	8	59	1,771	1,687	3,458	2·4	2·4	2·4	·7	1
160	93	10	5	26	57	1,027	967	1,994	2·4	2·3	2·4	·7	2
94	30	1	1	7	28	271	278	549	·5	·5	·5	·4	3
311	342	272	141	313	554	3,103	3,099	6,202	2·3	2·3	2·3	1·0	4
195	58	60	48	147	129	1,192	1,317	2,509	2·1	2·5	2·3	·7	5
313	178	47	46	115	233	2,294	2,179	4,473	4·3	4·7	4·5	1·9	6
342	222	121	95	234	879	6,711	5,886	12,597	5·1	5·2	5·1	2·2	7
136	57	49	65	186	100	1,708	876	2,584	2·4	2·5	2·4	1·3	8
58	30	30	318	652	518	2,652	2,581	5,233	3·5	3·5	3·5	1·1	9
93	85	65	64	337	270	2,108	1,995	4,103	3·3	3·1	3·2	1·2	10
54	63	112	132	491	609	2,290	1,971	4,261	2·6	2·4	2·5	1·8	11
76	18	19	17	106	243	2,213	1,920	4,133	2·9	2·8	2·8	1·8	12
19	12	2	2	34	308	3,425	3 191	6,616	4·5	4·4	4·4	1·3	13
100	57	34	35	289	465	836	755	1,591	·9	·9	·9	·5	14
83	68	10	3	14	35	260	261	521	·5	·6	·5	·7	15
76	11	..	..	..	..	64	53	117	·4	·4	·4	·02	16
120	208	577	888	1,165	600	2,330	2,670	5,000	1·8	2·2	2·0	1·0	17
12	20	77	400	723	448	1,022	1,022	2,044	1·9	2·0	1·9	·8	18
21	28	43	834	1,521	699	2,125	2,233	4,358	3·0	3·3	3·1	1·3	19
26	15	5	3	2	94	560	514	1,074	1·1	1·0	1·1	1·7	20
139	55	85	538	1,676	1,435	6,721	6,419	13,140	4·3	4·1	4·2	1·6	21
209	189	444	1,181	2,731	2,927	8,168	7,702	15,870	3·2	3·3	3·3	1·5	22
63	165	224	373	972	1,193	5,034	4,743	9,777	4·4	4·3	4·3	1·6	23
172	127	50	21	14	101	4,288	3,404	7,692	3·2	2·7	2·9	1·4	24
435	438	299	98	17	84	2,174	2,205	4,379	2·8	2·6	2·7	·7	25
582	485	332	213	248	262	2,756	2,716	5,472	3·7	3·7	3·7	1·3	26
96	50	60	231	281	491	3,458	3,040	6,498	2·5	2·3	2·4	1·5	27
4,087	3,187	3,078	5,758	12,309	12,821	70,561	65,684	136,245	2·9	2·9	2·9	1·3	

Annual Form No. VIII.—Deaths registered from SMALL-POX in the

1	2	3		4		5						
		Circles of Registration.		Villages.		January.	February.	March.	April.	May.	June.	July.
		Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.							
	<i>Burdwan Division.</i>											
1	Burdwan ..	29	25	2,817	507	32	64	136	225	237	165	77
2	Birbhum ..	15	14	2,302	200	31	31	13	40	108	65	26
3	Bankura ..	22	16	4,003	89	10	14	25	30	20	29	8
4	Midnapur ..	33	31	10,351	930	323	389	606	808	660	394	189
5	Hooghly ..	26	24	2,197	311	18	33	89	47	138	151	77
6	Howrah ..	13	13	863	16	54	46	30	61	68	33	20
	<i>Presidency Division.</i>											
7	24-Parganas ..	62	46	3,427	380	93	115	178	155	166	89	73
8	Calcutta ..	1	1	1	1	31	34	98	132	121	66	40
9	Nadia ..	30	24	2,353	343	132	94	127	207	312	144	34
10	Murshidabad ..	26	26	1,974	720	157	149	230	515	678	391	304
11	Jessore ..	27	17	3,613	80	9	16	45	38	38	42	..
12	Khulna ..	25	11	2,011	27	11	2	16	20	7	8	2
	<i>Rajshahi Division.</i>											
13	Rajshahi ..	26	23	4,487	280	26	18	30	221	182	106	77
14	Dinaipur ..	31	29	6,612	370	95	161	184	309	403	293	123
15	Jalpaiguri ..	18	12	722	35	17	2	8	4	12	6	7
16	Darjeeling ..	6	3	304	7	..	2	4	..	1	..	3
17	Rangpur ..	32	30	4,102	..*	206	95	110	172	526	494	222
18	Bogra ..	14	14	2,780	376	121	191	232	302	435	280	189
19	Pabna ..	19	19	2,539	247	58	27	63	186	114	81	51
20	Malda ..	18	18	2,239	181	227	296	451	846	671	407	133
	<i>Dacca Division.</i>											
21	Dacca ..	14	14	4,737	875	207	219	419	1,065	1,392	972	664
22	Mymensingh ..	60	58	7,354	779	284	315	595	759	804	626	507
23	Faridpur ..	17	16	3,363	795	84	89	255	245	258	263	297
24	Bakarganj ..	22	13	2,990	74	9	3	12	27	27	16	8
	<i>Chittagong Division.</i>											
25	Chittagong ..	22	21	870	345	252	369	642	1,154	703	259	286
26	Noakhali ..	15	14	1,719	191	24	36	48	79	81	44	19
27	Tippera ..	15	14	4,018	375	44	128	227	460	396	320	243
	Total for the Bengal Presidency ..	638	546	84,748	8,534	2,555	2,938	4,873	8,107	8,558	5,744	3,679

* Information not furnished,

districts of the Bengal Presidency during each month of the year 1928.

August.	Septem-ber.	October.	Novem-ber.	Decem-ber.	6 Total.			7 Number of those deaths among children.		8 Ratio of deaths per 1,000 of population.			9 Mean ratio per 1,000 during pre- vious five years.	10 Number.
					Male.	Female.	Total.	Under one year.	One year and under ten years.	Male.	Female	Total.		
55	48	19	13	19	547	543	1,090	94	159	·7	·8	·8	·6	1
9	6	2	..	..	158	173	331	31	54	·4	·4	·4	·7	2
11	4	1	1	2	73	82	155	7	11	·1	·2	·1	·3	3
130	58	66	25	24	1,862	1,810	3,672	202	773	1·4	1·4	1·4	·7	4
62	34	39	30	40	381	377	758	20	113	·7	·7	·7	·6	5
9	10	..	8	11	183	167	350	3	8	·3	·4	·3	1·2	6
58	51	27	13	43	550	511	1,061	108	360	·4	·4	·4	·7	7
14	6	5	4	7	295	263	558	61	132	·4	·7	·5	1·5	8
69	21	26	12	36	605	609	1,214	208	350	·8	·8	·8	·2	9
70	52	31	12	61	1,305	1,345	2,650	521	945	2·1	2·1	2·1	1·0	10
23	13	16	7	2	131	118	249	..	1	·1	·1	·1	·1	11
1	..	..	1	..	32	36	68	..	..	·04	·05	·05	·05	12
28	22	18	17	28	406	367	773	6	27	·5	·5	·5	·1	13
21	12	9	6	23	848	791	1,639	124	477	·9	1·0	1·0	·3	14
7	9	2	3	2	47	32	79	2	2	·1	·1	·1	·2	15
..	..	1	2	3	13	3	16	..	..	·1	·02	·1	·03	16
143	130	60	63	50	1,124	1,147	2,271	151	282	·8	1·0	·9	·3	17
46	45	8	11	9	914	955	1,869	66	299	1·7	1·9	1·8	·9	18
6	13	19	7	17	337	305	642	35	159	·5	·4	·5	1·2	19
52	36	28	24	57	1,694	1,534	3,228	231	424	3·4	3·1	3·3	·3	20
613	514	282	222	380	3,632	3,317	6,949	741	1,953	2·3	2·1	2·2	·3	21
252	146	101	125	164	2,437	2,241	4,678	686	1,575	1·0	1·0	1·0	·2	22
115	170	105	113	217	1,131	1,080	2,211	200	591	1·0	1·0	1·0	·1	23
8	2	12	2	21	84	63	147	..	..	·1	·05	·1	·04	24
102	75	66	20	110	2,032	2,006	4,038	699	1,776	2·6	2·4	2·5	·4	25
28	11	5	2	6	187	196	383	10	43	·2	·3	·3	·2	26
220	80	121	81	159	1,349	1,130	2,479	106	456	1·0	·8	·9	·1	27
2,152	1,568	1,069	824	1,491	22,357	21,201	43,558	4,312	10,970	·9	·9	·9	·4	

Annual Form No. IX.—Deaths registered from FEVERS in the

1	2			3		4		5					
				Circles of Registration.		Villages.		January.	February	March.	April.	May.	June.
	Districts.			Number in each district.	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.						
	<i>Burdwan Division.</i>												
1	Burdwan	..	..	29	29	2,817	2,190	2,902	2,246	2,685	2,328	2,044	1,505
2	Birbhum	..	..	15	15	2,302	1,468	1,985	1,463	1,698	1,635	1,602	1,296
3	Bankura	..	..	22	22	4,003	3,207	1,185	913	1,288	1,360	1,023	972
4	Midnapur	..	..	33	33	10,351	7,792	3,526	3,539	3,544	3,452	2,937	2,189
5	Hooghly	..	..	26	26	2,197	1,399	2,289	1,188	1,208	1,224	1,581	1,529
6	Howrah	..	..	13	13	863	225	991	850	838	914	600	553
	<i>Presidency Division.</i>												
7	24-Parganas	..	..	62	62	3,427	2,451	3,197	2,364	2,823	1,781	1,708	1,750
8	Calcutta	..	..	1	1	1	1	393	377	458	465	423	340
9	Nadia	..	..	30	30	2,353	2,141	3,775	2,582	2,312	2,976	2,218	1,647
10	Murshidabad	..	..	26	26	1,974	1,321	2,784	1,957	2,224	2,474	1,820	1,485
11	Jessore	..	..	27	27	3,613	2,706	5,394	3,406	3,580	3,221	2,833	1,973
12	Khulna	..	..	25	25	2,011	1,801	2,340	1,736	1,528	1,334	1,078	1,012
	<i>Rajshahi Division.</i>												
13	Rajshahi	..	..	26	26	4,487	2,995	4,184	2,805	3,314	3,655	2,585	1,713
14	Dinajpur	..	..	31	31	6,612	714	5,213	3,892	3,770	4,280	3,888	2,934
15	Jalpaiguri	..	..	18	18	722	506	1,962	1,289	1,445	1,878	2,127	1,615
16	Darjeeling	..	..	6	6	304	301	489	353	422	570	451	505
17	Rangpur	..	..	32	32	4,102	*	5,578	3,709	2,708	3,810	4,017	4,564
18	Bogra	..	..	14	14	2,780	1,877	1,755	1,430	1,123	1,063	1,062	838
19	Pabna	..	..	19	19	2,539	1,939	3,458	1,971	1,862	2,309	1,753	1,233
20	Malda	..	..	18	18	2,239	1,086	2,393	1,250	1,772	2,245	1,776	1,529
	<i>Dacca Division.</i>												
21	Dacca	..	..	14	14	4,737	3,437	4,330	2,587	2,440	3,035	2,538	1,776
22	Mymensingh	..	..	60	60	7,354	4,253	7,223	4,344	3,907	4,821	4,618	4,177
23	Faridpur	..	..	17	17	3,363	2,291	4,363	2,875	3,043	3,311	2,160	1,779
24	Bakarganj	..	..	22	22	2,990	2,111	4,774	3,016	3,443	3,789	3,280	2,372
	<i>Chittagong Division.</i>												
25	Chittagong	..	..	22	22	870	847	4,200	2,779	2,578	3,129	2,754	2,963
26	Noakhali	..	..	15	15	1,719	1,234	2,644	1,767	1,941	2,078	2,165	2,140
27	Tippera	..	..	15	15	4,018	2,510	2,809	2,433	2,347	2,349	1,909	1,800
	Total for the Bengal Presidency			638	638	84,748	52,803	86,136	59,121	60,301	65,486	56,950	48,189

* Information not furnished.

districts of the Bengal Presidency during each month of the year 1928.

July.	August.	Septem- ber.	October.	Novem- ber.	Deecem- ber.	6			7			8	9
						Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 during pre- vious five years.	Number.
						Male.	Female.	Total.	Male.	Female.	Total.		
1,523	1,814	1,671	1,447	1,897	2,126	12,071	12,117	24,188	16·5	17·1	16·8	18·4	1
1,311	1,605	1,298	1,325	1,693	1,618	9,277	9,252	18,529	21·9	21·8	21·9	21·3	2
1,021	1,153	1,021	1,100	2,685	1,582	7,529	7,774	15,303	14·8	15·2	15·0	16·1	3
2,376	2,828	2,641	3,224	3,908	4,433	19,317	19,280	38,597	14·4	14·5	14·5	16·6	4
1,145	1,069	1,092	989	1,168	1,372	7,634	8,220	15,854	13·6	15·8	14·7	16·9	5
595	601	583	707	748	810	4,509	4,281	8,790	8·4	9·3	8·8	11·1	6
1,882	2,085	1,979	2,104	2,350	2,836	14,036	12,823	26,859	10·6	11·3	10·9	15·4	7
365	387	395	370	459	366	2,502	2,296	4,798	3·4	6·5	4·4	4·6	8
1,498	1,641	1,892	2,108	2,756	3,729	14,836	14,298	29,134	19·5	19·7	19·6	23·3	9
1,782	1,478	1,504	1,598	1,771	2,097	11,989	10,985	22,974	19·1	17·3	18·2	22·4	10
1,944	1,951	2,394	2,973	4,709	7,236	21,455	20,159	41,614	24·0	24·3	24·2	22·8	11
1,182	1,216	1,256	1,532	1,834	2,496	9,206	9,338	18,544	12·1	13·4	12·8	16·5	12
2,162	1,996	2,666	3,058	3,247	4,125	18,176	17,334	35,510	23·7	24·0	23·8	28·6	13
3,351	3,165	3,370	5,632	5,229	6,888	27,002	24,610	51,612	30·1	30·4	30·3	30·1	14
1,798	1,514	1,430	1,866	2,006	2,700	11,374	10,256	21,630	22·6	23·7	23·1	23·7	15
520	481	473	498	536	664	3,171	2,791	5,962	21·3	20·9	21·1	22·3	16
4,688	3,906	5,387	5,839	6,554	7,156	29,787	28,129	57,916	22·6	23·6	23·1	26·6	17
1,109	1,329	1,463	1,360	1,812	1,712	8,107	7,949	16,056	15·0	15·6	15·3	19·6	18
1,094	795	1,020	1,555	2,405	2,740	11,469	10,726	22,195	16·2	15·7	16·0	21·8	19
1,601	1,150	1,107	1,555	1,626	1,855	10,605	9,254	19,859	21·5	18·8	20·1	21·9	20
2,073	2,160	2,777	3,335	4,166	4,456	17,949	17,724	35,673	11·4	11·4	11·4	14·0	21
4,540	3,461	4,257	5,711	5,871	8,580	31,600	29,910	61,510	12·6	12·8	12·7	15·9	22
1,839	1,966	2,266	2,706	3,742	4,849	18,037	16,862	34,899	15·7	15·3	15·5	18·2	23
2,662	1,903	2,073	2,923	3,293	4,335	19,659	18,204	37,863	14·6	14·2	14·4	16·6	24
3,834	2,633	2,303	2,723	2,252	3,166	18,081	17,233	35,314	23·2	20·7	21·9	20·1	25
2,274	1,524	1,412	1,857	1,780	2,431	11,834	12,179	24,013	16·0	16·6	16·3	18·3	26
1,920	1,716	1,703	2,361	2,692	2,768	13,713	13,094	26,807	9·7	9·8	9·8	11·6	27
52,089	47,527	51,433	62,456	73,189	89,126	384,925	367,078	752,003	16·0	16·3	16·1	18·5	

Annual Form No. X.—Deaths registered from DYSENTERY AND DIARRHŒA in the

1 Number.	2 Districts.		3 Circles of Registration.		4 Villages.		5					
			Number in each district.	Number from which deaths from dysentery and diarrhœa were reported.	Number in each district.	Number from which deaths from dysentery and diarrhœa were reported.	January.	Febru- ary.	March.	April.	May.	June.
	<i>Burdwan Division.</i>											
1	Burdwan	..	29	29	2,817	813	188	182	184	160	96	79
2	Birbhum	..	15	15	2,302	272	16	8	14	45	27	35
3	Bankura	..	22	22	4,003	657	104	89	117	122	113	67
4	Midnapur	..	33	32	10,351	572	162	143	167	151	129	101
5	Hooghly	..	26	26	2,197	308	213	90	126	82	151	165
6	Howrah	..	13	13	863	194	406	383	270	262	227	222
	<i>Presidency Division.</i>											
7	24-Parganas	..	62	60	3,427	412	228	183	153	112	114	147
8	Calcutta	..	1	1	1	1	379	341	389	317	293	257
9	Nadia	..	30	29	2,353	245	76	54	55	68	48	26
10	Murshidabad	..	26	18	1,974	36	25	20	18	17	11	6
11	Jessore	..	27	24	3,613	155	27	8	32	23	11	15
12	Khulna	..	25	25	2,011	86	54	42	28	24	33	29
	<i>Rajshahi Division.</i>											
13	Rajshahi	..	26	21	4,487	96	32	7	11	9	10	7
14	Dinaipur	..	31	24	6,612	94	14	4	8	11	17	15
15	Jalpaiguri	..	18	17	722	192	51	29	52	54	83	102
16	Darjeeling	..	6	6	304	184	22	27	27	66	79	89
17	Rangpur	..	32	32	4,102	..*	27	37	17	30	77	110
18	Bogra	..	14	14	2,780	167	32	28	20	48	47	32
19	Pabna	..	19	18	2,539	118	10	3	18	48	15	5
20	Malda	..	18	10	2,239	8	9	7	9	6	2	4
	<i>Dacca Division.</i>											
21	Dacca	..	14	14	4,737	1,098	314	122	256	378	232	142
22	Mymensingh	..	60	60	7,354	877	340	121	129	279	273	141
23	Faridpur	..	17	17	3,363	1,056	187	164	352	279	171	121
24	Bakarganj	..	22	22	2,990	446	144	85	106	146	133	80
	<i>Chittagong Division.</i>											
25	Chittagong	..	22	22	870	318	89	63	64	76	63	52
26	Noakhali	..	15	15	1,719	479	98	69	77	112	153	72
27	Tippera	..	15	15	4,018	718	181	169	182	213	148	90
	Total for the Bengal Presidency		638	601	84,748	9,602	3,428	2,478	2,881	3,138	2,756	2,212

* Information not furnished.

districts of the Bengal Presidency during each month of the year 1928.

						6			7			8	9
July.	August	Septem-ber.	October.	Novem-ber.	Deeem-ber.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 during previous five years.	Number.
						Male.	Female.	Total.	Male.	Female.	Total.		
97	107	73	58	57	85	706	660	1,366	·9	·9	·9	·5	1
30	31	11	18	13	25	162	111	273	·4	·3	·3	·1	2
86	117	74	75	79	79	615	507	1,122	1·2	1·0	1·0	·9	3
117	150	102	103	110	178	832	781	1,613	·6	·6	·6	·5	4
170	167	172	131	164	170	832	969	1,801	1·5	1·8	1·7	1·3	5
232	279	232	291	239	291	1,630	1,704	3,334	3·0	3·7	3·3	3·0	6
196	163	158	146	154	209	957	1,006	1,963	·7	·9	·7	·7	7
304	281	240	267	282	277	1,852	1,775	3,627	2·6	5·0	3·4	3·2	8
28	23	29	25	47	31	299	211	510	·3	·3	·3	·3	9
17	16	7	7	8	7	91	68	159	·1	·1	·1	·1	10
4	3	17	12	33	30	133	82	215	·2	·1	·1	·1	11
20	48	46	61	85	112	302	280	582	·3	·4	·4	·2	12
7	10	..	5	18	18	88	46	134	·1	·1	·1	·1	13
6	11	5	8	15	25	80	59	139	·1	·1	·1	·1	14
137	82	72	110	88	63	496	427	923	1·0	·9	1·0	1·0	15
92	49	25	32	22	13	294	249	543	1·9	1·8	1·9	2·2	16
61	81	115	141	185	157	606	432	1,038	·5	·3	·4	·1	17
32	10	41	43	38	45	240	176	416	·5	·3	·4	·3	18
11	7	5	35	49	31	144	93	237	·2	·2	·2	·1	19
1	1	4	5	2	10	36	24	60	·1	·05	·05	·1	20
216	229	358	492	616	622	2,038	1,939	3,977	1·3	1·2	1·2	·7	21
99	75	109	236	365	350	1,306	1,211	2,517	·5	·5	·5	·3	22
122	157	163	195	239	250	1,276	1,124	2,400	1·1	1·0	1·0	·4	23
65	43	45	59	54	76	605	431	1,036	·5	·4	·4	·3	24
64	71	48	29	36	47	366	336	702	·5	·4	·4	·2	25
69	41	52	53	65	109	558	413	971	·8	·5	·6	·2	26
107	80	100	134	171	186	919	842	1,761	·7	·6	·6	·6	27
2,390	2,332	2,303	2,771	3,234	3,496	17,463	15,956	33,419	·7	·7	·7	·5	

Annual Form No. XI.—Deaths registered from RESPIRATORY DISEASES in the districts

1 Number.	2 Districts.			3 Circles of Registration.		4 Villages.		5					
				Number in each district.	Number from which deaths from respira- tory diseases were reported.	Number in each district.	Number from which deaths from respira- tory diseases were reported.	January.	February.	March.	April.	May.	June.
	<i>Burdwan Division.</i>												
1	Burdwan	..	..	29	29	2,817	996	247	261	352	267	229	172
2	Birbhum	..	..	15	15	2,302	428	21	15	20	25	83	60
3	Bankura	..	..	22	22	4,003	728	151	127	177	175	151	140
4	Midnapur	..	..	33	33	10,351	393	186	234	272	256	187	138
5	Hooghly	..	..	26	26	2,197	281	163	82	176	164	224	308
6	Howrah	..	..	13	13	863	221	414	410	361	303	344	259
	<i>Presidency Division.</i>												
7	24-Parganas	..	..	62	61	3,427	461	284	231	291	176	206	204
8	Calcutta	..	..	1	1	1	1	1,204	985	1,158	953	839	793
9	Nadia	..	..	30	30	2,353	513	142	133	112	146	177	76
10	Murshidabad	..	..	26	25	1,974	33	24	25	37	25	22	20
11	Jessore	..	..	27	27	3,613	150	42	36	51	33	31	26
12	Khulna	..	..	25	23	2,011	47	79	62	69	63	52	49
	<i>Rajshahi Division.</i>												
13	Rajshahi	..	..	26	20	4,487	119	17	19	21	16	17	7
14	Dinajpur	..	..	31	24	6,612	153	48	25	22	22	17	14
15	Jalpaiguri	..	..	18	15	722	117	114	101	124	146	74	75
16	Darjeeling	..	..	6	6	304	157	54	24	41	55	49	56
17	Rangpur	..	..	32	32	4,102	..*	22	16	12	20	62	53
18	Bogra	..	..	14	14	2,780	166	67	41	49	33	21	40
19	Pabna	..	..	19	19	2,539	35	9	19	6	11	12	8
20	Malda	..	..	18	15	2,239	10	11	11	8	12	6	14
	<i>Dacca Division.</i>												
21	Dacca	..	..	14	14	4,737	993	163	133	175	131	94	58
22	Mymensingh	..	..	60	57	7,354	581	114	82	80	95	77	67
23	Faridpur	..	..	17	17	3,363	846	224	226	256	227	157	147
24	Bakarganj	..	..	22	22	2,990	132	37	27	68	52	27	19
	<i>Chittagong Division.</i>												
25	Chittagong	..	..	22	21	870	18	28	22	26	26	26	26
26	Noakhali	..	..	15	11	1,719	146	15	28	45	16	18	24
27	Tippera	..	..	15	15	4,018	374	92	96	97	88	60	64
	Total for the Bengal Presidency ..			638	607	84,748	8,099	3,972	3,471	4,106	3,536	3,262	2,917

* Information not furnished.

of the Bengal Presidency during each month of the year 1928.

						6			7			8	9
July.	August.	Septem-ber.	October.	Novem-ber.	Decem-ber.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 during pre-vious five years.	Number.
						Male.	Female.	Total.	Male.	Female.	Total.		
166	187	171	163	206	235	1,685	971	2,656	2·3	1·4	1·8	·7	1
71	83	92	86	93	79	470	258	728	1·1	·6	·9	·1	2
132	139	140	120	191	153	1,217	579	1,796	2·4	1·1	1·8	·9	3
149	110	117	144	207	277	1,470	807	2,277	1·1	·6	·8	·6	4
226	224	261	223	230	333	1,631	983	2,614	2·9	1·9	2·4	1·1	5
264	253	271	275	356	359	2,357	1,512	3,869	4·4	3·3	3·9	3·1	6
226	213	208	282	296	406	2,071	952	3,023	1·6	·8	1·2	1·0	7
802	819	619	657	833	971	6,147	4,486	10,633	8·5	12·7	9·9	9·3	8
78	106	133	124	132	175	1,034	500	1,534	1·4	0·7	1·0	·6	9
22	13	21	19	11	21	169	91	260	·3	·1	·2	·2	10
32	26	33	50	45	24	305	124	429	·3	·1	·2	·2	11
63	54	61	89	89	121	586	265	851	·8	·4	·6	·2	12
18	7	6	5	12	6	108	43	151	·1	·1	·1	·1	13
17	13	17	18	26	36	195	80	275	·2	·1	·2	·1	14
75	74	89	116	157	107	730	522	1,252	1·4	1·2	1·3	1·1	15
47	36	40	41	46	42	325	206	531	2·2	1·5	1·9	1·7	16
57	62	78	111	132	150	534	241	775	·4	·2	·3	·05	17
14	36	16	26	37	39	294	125	419	·5	·2	·4	·4	18
12	9	17	75	75	74	229	98	327	·3	·1	·2	·1	19
6	6	6	8	20	10	73	45	118	·1	·1	·1	·1	20
163	243	264	371	280	308	1,467	916	2,383	·9	·6	·8	·3	21
55	55	70	135	122	157	808	301	1,109	·3	·1	·2	·2	22
130	127	161	173	263	304	1,494	901	2,395	1·3	·8	1·1	·2	23
23	27	28	51	25	24	257	151	408	·2	·1	·1	·1	24
15	13	14	37	14	18	173	92	265	·2	·1	·2	·2	25
14	11	11	10	18	18	135	93	228	·2	·1	·1	·05	26
·70	53	67	·60	106	83	538	398	936	·4	·3	·3	·4	27
2,947	2,999	3,011	3,469	4,022	4,530	26,502	15,740	42,242	1·1	·7	·9	·6	

Annual Form No. XII.—Deaths registered from PLAGUE in the

1	2			3		4		5					
				Circles of Registration.		Villages.		January.	February.	March.	April.	May.	June.
	Number.	Districts.		Number in each district.	Number from which deaths from plague were reported.	Number in each district.	Number from which deaths from plague were reported.						
		<i>Burdwan Division.</i>											
1		Burdwan	..	29	1	2,817	1	..	..	1	..	..	..
2		Birbhum	..	15	..	2,302	..	..	..	..	..	..	..
3		Bankura	..	22	..	4,003	..	..	..	..	..	..	..
4		Midnapur	..	33	..	10,351	..	..	..	..	..	..	..
5		Hooghly	..	26	..	2,197	..	..	..	..	..	..	..
6		Howrah	..	13	..	863	..	..	..	..	..	..	..
		<i>Presidency Division.</i>											
7		24-Parganas	..	62	..	3,427	..	..	..	..	..	..	..
8		Calcutta	..	1	1	1	1	1	..	..	2	..	..
9		Nadia	..	30	..	2,353	..	..	..	..	..	..	..
10		Murshidabad	..	26	..	1,974	..	..	..	..	..	..	..
11		Jessore	..	27	..	3,613	..	..	..	..	..	..	..
12		Khulna	..	25	..	2,011	..	..	..	..	..	..	..
		<i>Rajshahi Division.</i>											
13		Rajshahi	..	26	..	4,487	..	..	..	..	..	..	..
14		Dinajpur	..	31	..	6,612	..	..	..	..	..	..	..
15		Jalpaiguri	..	18	..	722	..	..	..	..	..	..	..
16		Darjeeling	..	6	..	304	..	..	..	..	..	..	..
17		Rangpur	..	32	1	4,102	1	..	..	1	..	..	..
18		Bogra	..	14	..	2,780	..	..	..	..	..	..	..
19		Pabna	..	19	..	2,539	..	..	..	..	..	..	..
20		Malda	..	18	..	2,239	..	..	..	..	..	..	..
		<i>Dacca Division.</i>											
21		Dacca	..	14	..	4,737	..	..	..	..	..	..	..
22		Mymensingh	..	60	..	7,354	..	..	..	..	..	..	..
23		Faridpur	..	17	..	3,363	..	..	..	..	..	..	..
24		Bakarganj	..	22	..	2,990	..	..	..	..	..	..	..
		<i>Chittagong Division.</i>											
25		Chittagong	..	22	..	870	..	..	..	..	..	..	..
26		Noakhali	..	15	..	1,719	..	..	..	..	..	..	..
27		Tippera	..	15	..	4,018	..	..	..	..	..	..	..
		Total for the Bengal Presidency	..	638	3	84,748	3	1	..	2	2	..	..

districts of the Bengal Presidency during each month of the year 1928.

						6 Total.			7 Ratio of deaths per 1,000 of population.			8 Mean ratio per 1,000 during pre- vious five years.	9 Number.
July.	August.	Septem- ber.	October.	Novem- ber.	Deecem- ber.	Male.	Female.	Total.	Male.	Female.	Total.		
..	1	..	1	·001	..	·0006	..	1
..	2
..	3
..	4
..	5
..	6
..	7
..	..	1	..	..	..	4	..	4	·005	..	·004	·02	8
..	9
..	10
..	11
..	12
..	13
..	14
..	15
..	16
..	1	..	1	·0007	..	·0003	..	17
..	18
..	19
..	20
..	·001	21
..	22
..	23
..	24
..	25
..	26
..	27
..	..	1	..	..	..	6	..	6	·0002	..	·0001	·0006	

GOVERNMENT OF BENGAL.

Local Self-Government.

Public.

CALCUTTA, THE 2nd APRIL 1930.

RESOLUTION—No. 1050 P. H.

Minister-in-charge: The Hon'ble Kumar Shib Shekharreswar Ray.

READ—

The Report of the Director of Public Health, the Sanitary Board and the Chief Engineer, Public Health Department, for the year 1928.

READ ALSO—

The fourteenth triennial report on vaccination in Bengal for the years 1926-27, 1927-28 and 1928-29.

1. **Public Health.**—(Statistical, Epidemiological and General Public Health Administration.)

Population.—For the purpose of this review the total population of Bengal, excluding the Chittagong Hill Tracts, is taken as 46,522,293 (1921 Census).

The vital statistics for the year 1928 taken as they stand show an increase of almost 1,00,000 in the number of births over those for the previous year, 1,375,680 as against 1,286,863 and practically stationary figures for deaths, 1,189,015 as against 1,189,370 in the previous year. On this basis the provincial birth rate rose from 27·7 per thousand in 1927 to 29·6 per thousand in 1928, as against the quinquennial average of 28·8; but remains the lowest provincial birth rate in India except that of Burma. The aggregate birth rate in rural areas (30·2) was nearly fifty per cent. higher than in urban areas (20·4), but no exact inference can be drawn from these figures as to industrial vital statistics as the towns include the

numerous rural townships in Bengal. The death rate for the whole province was 25·5 per thousand as against 25·6 per thousand in 1927.

The Director of Public Health has occasion to point out every year that these figures can only be taken as a collateral index to the true vital statistics and would estimate the margin of error to be as high as 27 per cent. The transfer of the duty of recording vital statistics to Union Boards has increased the Director's difficulties in obtaining these essential figures and even in the municipalities supervision over registration of births and deaths is far from adequate. No less than ten municipalities returned the quite impossible death rate of less than 10 per thousand. The vital statistics for the province must therefore be approached with some reserve until the Census of 1931 provides the opportunity of testing their results over the last decade. The decrease of population in Hooghly and Jessore districts continued; but there was an excess of births over deaths in twenty-two districts in the province.

There was a check in the progressive decrease of infantile mortality which has been a feature of the vital statistics in recent years. This figure which had fallen from 228·3 per 1,000 in 1919 to 178 per 1,000 in 1927 remained practically stationary in 1928 (178·1 per 1,000).

The Calcutta Corporation and the Dacca Maternity and Child-welfare Trust continued to give special attention to midwifery and to the care of infant life with excellent results. In Calcutta 7 maternity units were at work in charge of 5 Lady Health Visitors assisted by 22 nurses, against 5 in 1927. They attended 6,541 cases as compared with 4,748 in the preceding year and the death rate during the first ten days of infancy among the cases attended excluding stillbirths, was only 19·2 per mille as against 35·5 per mille in 1927, while the general mortality rate within the first week of infancy in the city was 116·9 per mille. In Dacca two maternity centres worked as before during the year and of 4,318 births registered in the city 1,381 were attended to by the centre staff. The rate of reported mortality within 10 days of infancy among the

cases attended to by the staff was 4.2 per cent. as against 9.62 per cent. among infants in the rest of the town.

Over a thousand dais were given elementary training by local bodies or associations with the help of Government grant, and the total number of Exhibitions and Baby Weeks was more than doubled (166 as against 67).

Cholera.—The year 1928 continued to show a rise in the curve for mortality from cholera with a rate for Bengal in excess of that of any other province in India and more than double the quinquennial average. The total number of deaths was 136,245 in 1928 against 118,377 in 1927, showing an increase of 16.0 per cent. As in the previous year, preventive measures taken comprised inoculation, disinfection of water-supplies, disinfection of infected houses and of the patients' clothes. Eighteen medical officers and temporary staff of 5 Sub-Assistant Surgeons and 100 Sanitary Inspectors were deputed to assist local bodies in checking outbreaks. Propaganda work was carried on by means of lectures and magic lantern demonstration given by the Government Publicity staff and the local sanitary officers. Special measures were taken to inoculate pilgrims for the Puri Rathajatra and the Ganga Sagar Mela.

There was a further increase in inoculations for cholera during the year under review. 2,304,457 cubic centimeters of cholera vaccine were issued during 1928 against 1,299,630 in 1927 and the number of inoculations performed rose to 1,941,023 from 781,872 in 1927. It is to be remembered that preventive inoculation is a new measure in Bengal so that high figures for cholera mortality are likely to go hand in hand with activity in inoculation against cholera until the practice is sufficiently widespread to be adopted beforehand in anticipation of an epidemic.

Small-pox.—Even in the case of small-pox the statistics for 1928 go to show that the ideal of preventive efficiency in which vaccination can preclude an epidemic is far from having been reached. A quinquennial epidemic which had been forecasted began in 1924. The curve in 1928 was still rising, with 43,558 deaths as against 42,514 in 1925, and 5,567 in 1924 the zero year; and the one district which attempted an organized campaign of mass vaccination (Malda) was that which returned the highest

ratio of small-pox mortality 3.27 per thousand. The reason is obvious. Intensity of preventive action still follows, rather than anticipates, an epidemic; and this feature is further illustrated by the statistics for vaccination in the province as a whole. During the year under review there were 5,281,419 vaccinations of which 2,052,217 were primary vaccinations and 3,229,202 re-vaccinations, successful vaccinations being 92.9 per cent. and 56.5 per cent., respectively. The number of successfully vaccinated children under one year was 262,982 against 281,727 in the previous year, while the total number of births, excluding infant deaths of 241,974 was 1,126,812 during the same period. Protection was therefore given to only about 24 per cent. of the surviving infants. This was due to the unwillingness of parents or guardians to have their children vaccinated under the age of one year.

The Director of Public Health reports that district boards are actively engaged in organising vaccination to counter the further epidemic anticipated and Government have recently drawn their attention to the necessity of taking special steps for the purpose.

Malaria and kala-azar.—In contrast to the increase in the two periodical epidemics to which this province is exposed it is satisfactory to find a very definite decrease in mortality both from malaria and kala-azar. Deaths from malaria were reported at 368,691 as against 429,143 in 1927 and 458,208 in 1926. Even after allowances are made for the inevitable vagueness of returns on which statistics are based a reduction of over 24 per cent. in two years in deaths from a disease which in its nature is not liable to the sharply recurring curves of small-pox and cholera does seem to give grounds for hope that the attention and expenditure devoted to this cause by the Public Health Department in the past few years are bearing fruit. Similarly in the case of kala-azar the decline which was noticed as a satisfactory symptom in last year's report still continued, 10,746 deaths being reported as against 11,855 in 1927. The total number of deaths from fever 752,007 as against 789,006 in 1927 represents a nondescript mortality, the importance of the figure for the purpose of statistics being chiefly in the fact that the decrease precludes any idea that mortality from malaria has been transferred to this head.

In reviewing the record of District Boards in 1928-29 the Ministry of Public Health had occasion to dwell on the progress and prospects of the scheme for establishing a rural health unit in charge of a sanitary officer in each police station, and it need only be mentioned here that in 1928 the total number of these units had risen to 272, a figure by now nearly doubled.

Public Health Engineering.—During the year 1928 the Chief Engineer formally made over to the Titagarh Municipality the sewerage works constructed at a total cost of Rs. 10,67,405 including a Government grant of Rs. 3,55,000. These works represent the first attempt to sewer an industrial municipality in the mill area and are likely to prove of much interest as attention turns towards the improvement of industrial health in the vicinity of Calcutta. Technically their most interesting feature is the introduction of the new process of actuated sludge, the possibilities of which for a small sewerage scheme of this kind are far-reaching. For the rest the activities of the Engineering Branch continued on a scale restricted by the general financial conditions.

The Naihati water-supply scheme was completed and the unfiltered water required for the sewerage system was provided at Dacca. Work was in progress on water works at Khulna, Comilla Patuakhali, Faridpur, Pabna, Midnapore, Burdwan and Asansol.

Personal.—Dr. C. A. Bentley, C.I.E., and Mr. F. C. Griffin were in charge throughout the year of the respective offices of Director of Public Health and

Chief Engineer, Engineering Branch, and the Government of Bengal desire again to express their appreciation of their services.

By order of the Government of Bengal
[Ministry of Local Self-Government
(Public Health)],

C. W. GURNER,
Secretary to the Government of Bengal.

Nos. 1051-1061 P. H.

Copy of the Resolution [with copies of the reports] forwarded to (1) all Commissioners of Divisions for information and communication to all District Officers and all Chairmen of District Boards in their respective Divisions; (2) the Surgeon-General with the Government of Bengal; the Inspector-General of Prisons, and the Inspector-General of Police, Bengal; for information; (3) Director of Public Health, Bengal, the Chief Engineer Public Health Department, Bengal; and the Secretary to the Sanitary Board, Bengal, for information.

[] (1) and (2) only.

By order of the Government of Bengal
[Ministry of Local Self-Government
(Public Health)],

AMINUZZAMAN KHAN,
*Assistant Secretary to the Government
of Bengal.*

GOVERNMENT OF BENGAL.

Local Self-Government Department.

Public Health.

No. 1130 P.H.

FROM C. W. GURNER, Esq., I.C.S.,
Secretary to the Government of Bengal,

TO THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

Calcutta, the 5th April 1928.

Annual Public Health Reports and Resolution for 1928.

Minister-in-charge: The Hon'ble Kumar Shib Shekhareswar Ray.

SIR,

I am directed to submit for the information of the Government of India copies of the reports noted below, together with a copy of the resolution recorded thereon :—

- (1) Report of the Public Health Department for 1928.
- (2) Triennial report on Vaccination in Bengal for the years 1926-27,
1927-28 and 1928-29.

I have the honour to be,

SIR,

Your most obedient servant,

C. W. GURNER,
Secretary to the Government of Bengal.

